# RTTY JOURNAL ©

Price $2.00

A DEDICATED DIGITAL PUBLICATION Since 1953 VOLUME 38, NUMBER 5 MAY/JUNE 1990


# RM-7248 WITHDRAWN

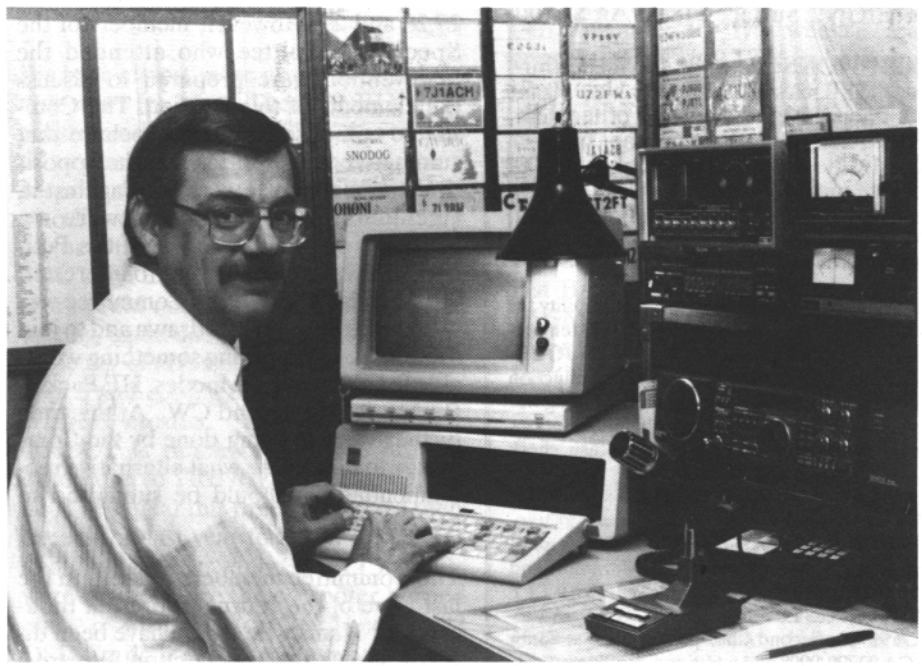
*See HITS & MISSES page 2*

IN THIS ISSUE



**STAY Excited About The Digital Modes**

## DXER OF THE MONTH



*Bob Meyer, WA9AKT at station controls. Bob's story on page 8 describes his long determined drive to be first in W9 land to attain WAZ. XW8KPL (Laos) made it all come to fruitation on February 12, 1990.*

**Beginner's Issue**

**RTTY JOURNAL**

**Dale S. Sinner, W6IWO**
**Owner, Publisher, Editor**

**ALL CORRESPONSENCE:**
**9085 La Casita Avenue**
**Fountain Valley, CA 92708**

**Phone: (714) 847-5058**
**FAX: (714) 892-2720**



**SUBSCRIPTION RATES**

USA .....$12.50
CANADA/MEXICO .. 1st Class $15.00
FOREIGN ... Surface $18.00/Air $24.00

**EXCEPTIONS:** Estonia, Latvia, Lithuania, USSR, Asia, Australia, New Zealand, Pacific Islands, Africa (other than North Africa), Indian Ocean Islands and Middle East - AIR only: $24.00 (Surface mail not advised). Cash, check or money order, in U.S. funds only and with request - no credit cards accepted.

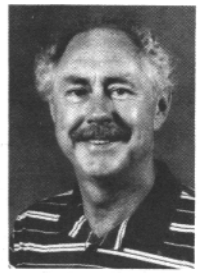


**POSTMASTER:**
The RTTY JOURNAL (USPS 391850) is published monthly, except combined May/June and July/August issues, for $12.50 per year, by RTTY JOURNAL, 9085 La Casita Avenue, Fountain Valley, CA 92708. Second Class postage paid at Santa Ana, CA 92799-9998 and additional mailing offices.

**ADDRESS CHANGES:**
Please send all address changes to: RTTY JOURNAL, 9085 La Casita Avenue, Fountain Valley, CA 92708.

**ISSN 0033-7161**





# HITS & MISSES

**Dale Sinner, W6IWO**
**9085 La Casita Ave. Fountain Valley, CA 92708**

## RM-7248 WITHDRAWN

On April 23, 1990, the ARRL requested from the FCC withdrawal of their Petition (RM-7248) for "Unattended Automatic Operation". At the time of the request, the ARRL also asked that the STA be continued until January 1991. Their decision will now allow for more study of what is right for the digital community.

Most of our readers may already have this information and we apologize for being repetitious. However, for those out in the Hinterlands, this may the first news of what has transpired.

The timing of the withdrawal was convenient to those of us who were at the Dayton Hamvention on the weekend of April 27,28 and 29. However, members of the Special Committee who attended the Hamvention were prepared to discuss the elements of this Petition. The Committee composed a small brochure that summarized the Petition and the opposition comments that were filed against it, (incidentally, no comments were received by the FCC in favor of the Petition) which was handed out to interested parties. The intent of the Committee was to have the Petition withdrawn and to join the ARRL in preparing something workable for all the digital modes, HF Packet, RTTY, AMTOR, and CW. At this time further work is being done by the Committee to determine what alternative recommendations should be submitted to the ARRL.

The Committee members as listed in the last issue of the Journal represent thousands of Hams who would have been directly affected by this Petition. We are a strong group with members from all the digital modes and you can be assured the Committee will do it's upmost to see that justice prevails.

Many of you have written to us with your ideas and comments and they are welcome. Please continue to write to us and to your Director, who can also help.

If you would like a copy of the Hand-Out we used at Dayton, simply send an SASE to the Journal office and we will return one to you. RM-7248 has solidified the digital community into a very strong united group, which we did not have before.

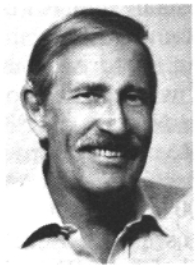
## BEGINNERS ISSUE

This month the Journal has devoted almost all the space to articles directed toward the beginner, who is just getting started or is new to the digital modes. It's impossible in a small publication such as this to cover all the bases, but we hope to cover enough to help you over the rough spots. In future issues, the Journal will include more of this type of information as it comes in and when space permits. In reading over the articles published this month, I notice that most of the columnists are entertaining mail from you, the reader. They are doing their best to publish what you want but they do not have a crystal ball to gaze into for answers. So please do yourself and our columnists a favor, by writing once in awhile. Maybe you have an idea to share. If so, submit it to the Journal office or one of the columnists. Either way, it will get attention.

A couple of months back the Journal included a "Reader Survey Card" in all domestic issues. It's purpose was to find out what you, the reader, wanted to read about in these pages. Soon the information gathered will be compiled and the results will be sent to all the Journal columnists. This should help us provide more of what you want, even though, at present we are not too far off base. Be assured we will do our best to provide top notch articles for you each month.

That's all the space I have for this month. Have a good Summer and we'll be back with you in the Fall. 73

**de Dale, W6IWO**



# DX NEWS

**John Troost, TG9VT**
**444 Brickell Ave. Suite 51-265**
**Miami, FL 33131-2492**

We sure could have done with a little better propagation in April. But in spite of the often poor conditions, there was some good DX around. I don't think that there is any doubt that the Solar Cycle is on the way down. We will not see theutstanding conditions of a year ago for many years to come.

The story of the month surely was the YV0AA expedition by the Radio Club Venezolano, who activated AVES ISLAND in digtial modes only and made lots of people happy in a very efficient manner. Great to see such an outstanding operation from an "ALL TIME NEW ONE" by a group strictly composed of local Venezuelan Operators. The trip was made on a sailing boat, catamaran, and paid for entirely out of the pockets of the participants. The story and pictures, written by YV5KAJ, are expected to be in the next issue of the RTTY JOURNAL, but should your heart feel generous, some contributions will be appreciated. Send them to the Call Book address of YV5KAJ, Pasquale, but make the check to the order of the "Radio Club Venezolano". An example for many other great expeditions, for whom RTTY is a "yes, maybe" affair. The QSLs will be out Mid June.

OH2BH, Martti Laine and a group did a nice job from AH3C/KH5J, JARVIS ISLAND and were reasonably active on RTTY.They are processing an application to the ARRL to request "New Country Status" for Jarvis, but if it does not work out, it will count as Palmyra in any event.

And Spratly, 1S0XV, did come off. Alex Lebedev, UL7PCZ, has been active on all modes from this rare spot, and as of this writing is still there, waiting for an additional supply of food and a new generator from Vietnam, to continue operations into May. Another "All Time New One" from a most difficult location.

The lucky and persistent ones this month were able to QSO with such rare ones like SU1HN, JY9SR, CE0ZIG (EASTER ISLAND), 3B8QS, A41SK, J28TY,, TA2DE, TA3D, VU2JX, 9J2AL, BY9GA, A51JS, 4K2OT, 5V7DP, UI8FM, VS6VC, YL1WR, FR5FI, FR5ZD, KH2L, J66AR, 4U1UN, RO5OO, LY1BYL, LY2WW, KP2N, XV0SU,JX9CAA, S92LB, YI1BGD, ZK2RW, 3W3RR, HV3SJ, 3X1SG, OY9JD,TR8JLD, SV5TS, UQ2HO, JG6CVO/JD1 (OGASAWARA), ZS9A, 9M2MU, V51P, V73AT, FP5DX, SU1ER, R18AZ, TU2BB, V44KW, EO50, CN8CC and many others. So the DX is there, just find time to catch it (and don't go to Dayton ..Hawr).

## DX COMINGS

We have almost more negative than positive news for May. The CONWAY expedition will not have RTTY, due to lack of an operator (though there could be a surprise from Ron Wright, ZL1AMO, who likes to carry his RTTY gear along on these trips). The coming expedition to SOUTH YEMEN, 7O, by Kuwaiti operators could not include RTTY as of this writing, again due to no operator and the difficulty of arranging gear at such short notice and getting the license to include Digital modes. The NATAL DX GROUP is running another 2 Months expedition to TRINIDAD ISLAND, but no RTTY gear this time. As regard their expedition last year to ZY0SY, St Peter and Paul's Rocks, only 37 RTTY QSOs were made before the computer burned out. An "All Time New One," but only 22 QSL Cards have been received. If you are one of those 15 guys who did not receive a card from ZY0SY, please QSL again.

On the positive side, the SOUTH **GEORGIA, VP8SGI**, and **SOUTH SANDWICH, VP8SSI**, are still on for around November 15 to December 15 of this year, with RTTY simultaneously in both Countries, so told me WA4JQS, the expedition leader, last week in Dayton. Contributions needed, please via AA6BB, RTTY gear from IRDXA.

**ZD9BV, TRISTAN DA CUNHA**, should be up any day now, with gear donated by the International RTTY DX Association (IRDXA). Meanwhile, to keep the gang occupied a "Slim" has been on, identifying alternatively as ZD9RT and ZD9TR, with non-existing QSL routes. Keeps the boredom out of it.

In Dayton, Don, WB2DND told me he hopes to activate the U.A.E., **A61AD** once more in October or November, with special emphasis on RTTY.

**NEPAL** should be active on all modes, including RTTY, May 10th- 31st. Look for **9N5DX** on all bands. This is a Polish Group on a Mountain Climbing Expedition. Soft Hearts (or needy ones), send their donations to SP9LJD.

"Bob Winters, **KD7P/KH2** will operate from Minami Torishima for one week in June on RTTY. He will also be QRV from Kure Island **KD7P/NH7** in October/November for two weeks. Heavily concentrating on RTTY in both operations.

**VK9LI**, Lord Howe will be up from approximately June 7-14, RTTY only. This will be a "barefoot" opration.

For anyone working **4U1ITU** during the last BARTG Contest, the operator was F6GMB and QSL Cards go to him. Jean plans to be active again from 4U1ITU for the CQ WW DX Contest in September.

**BANGLADESH** has been activated by several Expeditions on SSB and CW, but thus far there has been no RTTY. Theory is, that the S2 Authorities are reluctant to permit a Mode they have not learned how to monitor. Anything could come out of those little black boxes and they would not know. Hopes are that VK9NS, Jim Smith, will use his operating permit there soon, and will be able to convince the "Powers That Be" regarding RTTY. And also JA3MNP, Minoru, is trying to activate S2 on RTTY, as soon as he finishes his trip to **LAOS, XW8KPL**, late May. And Minoru also is hoping to operate **XZ, BURMA**, in the Late May

time frame. Lots of fingers and toes need to be crossed.

Sorry, those are all the prognostications I have available at this time and the next issue (summer schedule) is not coming out till Aug. So, for weekly updates, look at the Weekly RTTY DX News by VK2SG in most of the APPLINK MSO'S available to you on AMTOR.

## HOW DOES ONE DX??

Our dear Publisher, Dale, asked me to write this month to teach the unwary how to DX, up to that time I had not known that you can teach people to DX. Always thought that DXers were born, heredity and all that stuff, genes, etc. and that it was an inherent, not an acquired skill. But I guess Dale knows better, so here I shall dispense my wisdom (As my wife says: "What wisdom?").

The only requirements for successful DXing and getting a heap of Countries confirmed, are **PATIENCE** and **FRUSTRATION**. I have little patience, but can sure get frustrated. (Hear Alex Lebedev!)

Patience means that you sit for hours and hours at your gear, turn the tuning knob, switch bands, check out QSOs that you are not the slightest bit interested in, all in the hope that you will find either a station that you need, or some information which will lead to a station you need, to increase your Country Total.

My 10 year old remarked not too long ago: "I can do that too, Papa. All you have to do is turn that knob. Is it relaxing?".

Conditions the way they have been, there are many days that I do not have a single contact in the log, in spite of the fact that I have been sitting here on the radio, to my XYL's chagrin, for 10 or more hours, gone to bed at unreasonable times and gotten up at such times, thus insuring that my performance in the office would be a disaster that day. And still I did not find what I was looking for.

Sounds nice? Is that fun? Yes? OK, then you are ready to become a DXer, and you may have been born for that purpose.

### *So now you are ready! So what do you do?*

If your country total is near Zero, by all means call CQ and you will find that some Exotic Country, like Guatemala or one of the Germanies, will come back to you. Follow the instructions on QSLing by W3HNK in this issue (pg. 21) and you will be able to add him to your Country Total, Confirmed.

And about calling CQ: Call CQ CQDX, not RYRYRY (unless RY is part of your Call Sign). There is only one thing more annoying than strings of useless RY's, and that is HF Packet incursions on 14093.2. RY's are strictly made to test the performance of your gear, and are not a substitute for calling "CQ CQ CQDX".

So you say: "What do you mean 14093.2: my Read-Out says 14095.4". And that is something else every DXer should be familiar with. A correct RTTY frequency is expressed as the actual frequency of the Mark tone of the Mark/Space tone pair, which is not necessarily that shown on the Read Out of your Transceiver.

If you are in AFSK, (which no serious DXer is) then your Read-Out will be 2125 hertz higher then your actual transmitted Mark tone frequency. And even if you are in FSK, your Read- Out may not show your actual Mark frequency: depends on the gear, some show Mark frequency, some Space frequency and some may show anything.

AFSK means Audio Frequency Shift Keying. That means you feed audio tones to your microphone input from your RTTY Modulator/Demodulator (Modem). Every serious RTTYer should try to avoid this type of keying, as, almost without exception, you will find that you cannot use the narrow CW filters in your Receive section, and therefore the signal you wish to copy can easily be blocked by a strong adjacent signal. Additionally, an AFSK signal is very prone to over- modulation resulting not only in a wide signal, but several harmonics and possibly your "suppressed" AM carrier, 2125 Hertz above your Mark frequency: to win you popularity from the RTTY fraternity.

FSK means Frequency Shift Keying. Most transceivers have an "RTTY" position. That is for FSK and puts out a pair of CW like tones, normally 170 Hertz apart, which cannot be overmodulated. (But of course you can overdrive your Amp, which will still win you lots of friends.) But the main advantage of FSK is that you will be able to use the narrow CW filters in your transceiver. I always run a band-width of 500 hertz and when things get really rough, I switch in the 250 Hertz filters and get rid of the QRM.

So now you are on FSK, calling CQ DX, and pretty soon, you have enough cards for an RTTY DXCC. KB2HK did it in about two months in 1990. Wow, how come?? About a decade ago, it took "old" Jules, W2JGR several years to do that, and he is just as anxious and active as Lennie. The reason is simple: RTTY has become very popular. Digital modes are now in daily use in Countries, that only a few years ago thought that a Computer was a Machine of Mystery for the Idle Rich or Over-Educated. No, you don't need a Degree in Advanced Mathematics to operate a Computer on a daily basis, it's just as easy as talking into your microphone. And the RTTY crowd is very patient with those learning how to type, specially if their QTH is Albania or South Yemen.

So, now you sit with those 100 Countries and you send them in to Don Search at the ARRL, and then, in no time (4 to 5 months later), there is that brand-new DXCC in RTTY hanging on your wall.

So: why does it take so long to get the next 10? They are there all right, but it seems that you cannot copy them while your competition can, or you cannot break the pileup, or, even if they come back to you, you cannot see it on your screen due to the QRM.

So, the next logical step is to question your nice $300 TNC, good for all modes from Navtext to Amtor, FAX and Packet. And you have a point: just as no man can be all things to all men: so: no Multimode Machine can perform as well as one specifically designed for RTTY (plus maybe AMTOR). So then comes the money spending decision. You have to find something with filters to demodulate a tone pair of 170 hertz Mark/Space, not 200 Hertz as that is for Packet, and a compromise, but for those next 100 Countries you will not do very well with a "Compromise Machine."

Much good gear is available, but you get what you pay for. And here again, the formula is like for automobiles, double the money does not give you double the features. In fact, less features, but more quality. But that type of specialized gear is what you need to maintain somewhere near the rate at which you got your first 100 countries.

So now you are a born DXer, but the ideal DXer is one, not only born for it, but one about 45 years old, with unlimited funds, no job (nor needs one), with the ability to bear unlimited frustration, and with unlimited patience and not limited by a wife nor kids.. The **DXER UNLIMITED**.

So what the heck am I doing here writing this column: I should be scanning the band and getting nice and frustrated and my family angry. That is what it is all about. Be my guest!

## FUNNY CALLSIGNS

So, Dale asked me to explain to you what all those funny callsigns are about: here, as I am writing this, I see R3AFG on the screen. Yesterday I saw an EO5O. Boy those are sure not in the Country List. So how do I find out? Best I can do is check the "International Call Sign Allocations" in the back of the ARRL Logbook. There I find that a prefix of RAA to RZZ is the USSR. So, that does not help me much. What next? Well, I hate to say so, but the only answer is to ask the station itself what his QTH is. You get some gorgeous callsigns, like FR/J/FH5EC. If you look in the International Allocations, you will find that FR and FH would be France. If you look in the Country Tables you find that FR is Reunion Island and FH is Mayotte in the French Pacific Territories.

So how do you find out where FR/J/FH5EC actually is? Well, you either ask him, or you try to find out from your buddies, or the local 2 Meter Packet Cluster. The answer to the riddle is: the /J/ stands for "Juan de Nova". The way to go, as in anything else: if there is no other way to find out: ask!

LY2WW is in Lithuania. The Prefix for that country was "UP" until some months ago. But there is no way you could know, unless you are the ever patient one, the Unlimited DXer. But I can tell you a nice story about Gintas, LY2WW, so you will know what kind of a person he is, should you run across him. NN2G had the pleasure of working Gintas and sent him a QSL with two American Dollars (popularly known as "Green Stamps"). After a short while, Gintas sent his QSL to NN2G, with a note saying that $2. was far too much money to send for return postage and he enclosed two new USSR stamps, each good for an overseas airmail envelope from the USSR.

Sorry to say that not all Dx stations act in such a gentlemanly manner, but I could be sued if I gave you those details.

## CHIAO

Dayton was a ball, but I spent too much money. Plus, I did miss some good DX. Well, shows you cannot have everything, unlimited or not.

Keep tuned to the Weekly RTTY DX News from VK2SG, based on the input of a lot of Unlimited DXers. You can find it new each week, Friday Z, in my Aplink Box on 21074, 14069 or 14074. Or in the RTTY MSO of Gaylord, WB8ICL on 14085.625 Mark at 74 Baud RTTY.

Thank all of you for much of the information on which this column is based: without you there would not be a DX Column. Special thanks go to, amongst others, W2JGR, OD5NG, VK2SG, JA1ACB, W6PQS, YV5KAJ, PS7KM, FF1NZH, WA4LYH 9K2EC, W5KNE and WA4JQS.

I am sure that there is a lot more new RTTY DX coming up in the next two months, then is shown in this column. Keep in touch and GO GET IT!

May the Lord bless you all and give you that New One you need to get over the next level.

**de JOHN, TG9VT** and the Guatemalan Volcanos ■

# PACKET

**Richard Polivka, N6NKO**
**7052 S. Friends Ave. Apt J, Whittier, CA 90602**

## YOU WANNA?

You wanna what? Get into this thing called packet? Well, let me lead you down the road to a better life and busy fingers. It is now time to indulge ourselves.

What is this thing called packet? Well, to give a bit of history. It is an adaptation of a commercial communications standard that is used with computer systems to talk to each other over wires without errors. This allows data to be passed between them without errors. What essentially happened is that a group of enterprising amateurs decided to adapt the communications specs that are used in that wire line system and put them to work on the airwaves. By now, you are wondering what it takes to get involved in this. Ok, now here is what it takes to get going. It does not take much money and equipment. If you have a HF, VHF, or UHF radio, that will be a big help. Now you need a packet TNC. That is the device that talks and listens to the radio for the funny tones that you hear on some channels and converts them into something readable. You can spend as little as $50.00 for a used TNC to in excess of $300.00 for one that supports many of the digital modes. Now you need something to talk to the TNC. What you use there is dependent on what you want to do. If you just want to use it to type and read things with no storage capability, a dumb terminal will do. The terminals can be had for as little as $20.00. If you want be able to send and receive files of text and be able to store the files, then you will need a computer.

# ...Brings You A Better Experience

## Keyers


### The Morse Machine MM-3 Keyer

The Morse Machine has all the features you need in a memory keyer, including 2 to 99 WPM speed selection and over 8,000 characters of soft-partitioned memory. Twenty memories store your messages...as short or as long as you like. Memory can be expanded to 36,000 characters. All memory is backed up by an internal lithium battery.

Comprehensive Morse training facilities are built-in. **A Proficiency Trainer** for random code group practice. **A Random Word Generator** which generates four-letter words and **A QSO Simulator** which allows you to call stations, answer a CQ or listen to realistic on-the-air QSO's.

The MM-3 also features automatic serial number insertion and incrementing in any memory message. Use the front panel knob to adjust your sending speed or enter a precise speed with the keypad, toggling between the two at any time. Exchanges can be expedited by having parts of your message sent at a higher speed. You can even add remote switches for four of the memories to send your response or call CQ. The MM-3 can also be programmed for automatic beacon use. The RS-232 compatible serial I/O port provides computer control of the MM-3 and monitoring of the Morse training features.

## Packet


### PK-88 Packet Radio TNC

Unique operating features with a proven hardware and software design make AEA's PK-88 your best choice in packet radio--now with MailDrop, an 8KByte efficient personal Mailbox. The PK-88 also allows multiple single frequency QSO's, digipeating and networking. It's a superb value, packed with all the most needed packet radio features such as direct interface capability with NET/ROM and TCP/IP. In addition to all the features of a "standard" TNC, the PK-88 offers features not found in any other TNC:

- WHYNOT command - Shows reasons why some received packets are not displayed.
- "Packet Dump Suppression" - Prevents dumping unsent packets on the radio channel when the link fails.
- CUSTOM Command - Allows limited PK-88 customization for non-standard applications.
- Enhanced MBX command- Permits display of the data in I- and UI-frames, without packet headers and without packet headers or retried frames.
- Enhanced MPROTO command - Suppresses display of non- ASCII packets from Level Three switches and network nodes.

## Multi-Mode


### PK-232MBX Multi-Mode Data Controller

With over 40,000 units sold worldwide, the PK-232MBX is the world's leading multi-mode data controller. Combining all amateur data communication modes in one comprehensive unit, the PK-232MBX offers Morse Code, Baudot, ASCII, AMTOR/SITOR 476 and 625, HF and VHF Packet, WEFAX receive and transmit, TDM, as well as commercial standard NAVTEX automated marine information services.

All software is on ROM.

- 20 front panel status and mode LED indicators
- RS-232 compatible
- Exclusive SIAM™ Signal Identification and Acquisition Mode
- TDM Time Division Multiplex decoding
- PakMail™ mailbox with selective control of third-party traffic
- FAX printing - supports most printers
- Two radio ports
- Host mode for efficient program control of the PK-232MBX
- KISS mode for TCP/IP networking protocol compatibility
- 32K RAM lithium battery-backed
- Many features for the digital SWL

## Antenna Tuners


### AT-300 and AT-3000 Antenna Tuners

For tuning perfection, choose AEA's AT-300 (300 watt) or AT-3000 (3 kW) antenna tuners. Quality and exceptional engineering are built-in for maximum performance and long operating life.

The low-pass design provides more harmonic attenuation for lower TVI and allows matching to a much wider range of antenna impedances than common high-pass designs.

The AEA tuners feature a frequency compensated dual-movement SWR meter for ease of tuning with a front panel power range switch. Minimal SWR is achieved by inductors with 18 (AT-300) and 20 (AT-3000) taps. AEA's exclusive patent pending CAM switch design on the AT-3000 provides accurate tuning. The built-in front panel antenna switch allows you to easily select two unbalanced (coax-fed) antennas, a dummy load or a balanced antenna.

Advanced Electronic Applications, Inc. 2006-196th St. SW/P.O. Box 2160 Lynnwood, WA 98036 206-775-7373

## HOW TO HOOK UP THE MESS

**FIRST, get the manual for the TNC and READ IT!!!!!**

It will answer most of your questions on how to hook up the whole thing. Next, get out your soldering iron, wet sponge, and all of that rot and get ready to play wireman. Hooking up the radio to the TNC is easy. The TX audio line will go to the mic audio in line. Of course, ground is to ground, is to ground, is to ground. The PTT line is usually ground to transmit on most radios so just hook that up to the PTT line coming from the TNC. If it is not ground to TX, then read the manual on how to make the TNC work with that situation. The RX audio line can be had by plugging into the speaker jack of the radio with the appropriate plug. There are some radios on the market that have a audio out line in the mic connection. Of all of the radio's that I have seen with that capability, the level out is not high enough to make the demodulator work reliably. So, I still suggest coming off of the speaker jack on the back of the radio.

If you are going to use a handheld for your packet radio, like I do, then things will get a bit stickier as to the wiring. The ICOM and Kenwood handheld radios use two completely different schemes for PTT and the rest. If you are using an ICOM radio, follow the wiring in drawing #1 (pg. 9). You will need a mini-plug for the speaker jack and a micro-mini-plug for the microphone jack. A couple of additional parts will be needed. You will need a .1 uf capacitor and a 33k 1/4 watt resistor. These are needed because of PTT and the mic audio being on the same line on the mic plug. If you are using a Kenwood handheld, things get interesting. You will need to get a stereo micro-mini plug and a mini-plug. Follow Drawing #2 (pg. 9) on how to hook it up. The ring connection on the mic jack is the mic audio and the sleeve on the mic plug is the PTT line. The ground is picked up on the speaker plug sleeve and the speaker audio can be had off of the tip of the speaker jack. I am not sure on how to wire a Yaesu handheld but I am sure that there are people around who could help you out with the unit.

Now that you have the interface cable wired up for the radio, it is time to get the TNC talking to the computer. For that you will need a RS-232 cable, in most cases that is a straight wired cable and a male DB-25 on one end and a female DB-25 on the other. This cable will be used on the XT or PC level clones while you will need a female DB-9 to male DB-25 adapter to be able to use the cable on an AT class of computer. For the computer to talk to the TNC, you will need some sort of communications software. You can go out and buy one of the communications packages that are out there on the market or get one that is shareware or use one that may be sold by the TNC's manufacturer. Install the software per the manufacturer's instructions. You will want to put the cable into one of the unused com ports on the back of the computer and set up the software to use that port. Connect up the TNC to the computer and fire up the TNC and the computer and run the software. If all goes well, you should be talking to your TNC and having it respond to your commands.

Now you should type in your amateur call. The command that will usually work is 'mycall'. Just type that and your amateur call and hit return and it will put your call into the TNC. You might also want to type in 'txd 60'. This will set the txdelay of the TNC to 600 ms. If you find this to be too long, you can bring it down. Just remember that txdelay has to allow for your transmitter firing up, and the receiver of the other radio opening up and that TNC locking onto your signal.

You now should have the TNC tied to the computer and to the radio. Dig out the directions on how to calibrate the TX tones on your particular TNC. If you have a deviation meter, then GREAT! If not, get a radio that listens to the same frequencies that you will be using for packet. Put the TNC into calibrate mode and key up the radio and put the TNC into dither mode. If you have a deviation meter, adjust the level of the output of the TNC to yield a deviation of 3.5 KHz. That is about all you will need. If you do not have a meter and just a monitor receiver, use the following procedure. Turn up the level control while listening to the other radio. Turn it up until you do not hear the level increasing. Then start turning it down until you notice the level dropping. Leave it there. Now take the TNC out of calibrate mode. That sets the transmit level to a point that does not overdrive the radio you are using and presents a cleaner sounding tone to everybody. There are too many people out there that figure louder is better. Not with this stuff.

Now lets see if your station is going to receive packets. On most TNC's you can start by having the volume at 1/2 and start from there. Hopefully, when the squelch breaks open on a received packet signal, you will see some characters on the screen. If you are not seeing any, type "mon on" and hit return. That will make sure that the TNC will display monitored packets. If you are not seeing anything and the DCD light is coming on, it could be several things from too high a volume to a bad packet. Do a little experimentation with the squelch knob, which should be on the edge and no farther up, and the volume. Some TNC's out there are more finicky than others with regard to RX volume setting.

If you are receiving packets just fine, call a friend that you know locally on the landline and set up a meet with him on the local packet frequency. Have him give you a connect request and see if the two systems talk to each other. If all is going well, the 'con' light should come on and you can chat away. If not, try to find out what is going on over the phone. It may be something as simple as the audio level being off a little. If all is fine, have him disconnect from you and you connect up to him. If that works just fine, then you have it made. Enjoy packet.

Remember, if you are having problems, talk to a friend that you know is on packet. If he can't answer your question, maybe he or she could steer you in the right direction.

## DAYTON BITS

Well, Dale, W6IWO, brought me back some brochures from the Dayton convention. The one that really turned my head was the PacketRadio that is in Alpha test now and being worked on by TAPR. Catch this...25 watts at 9600 baud on 2 meters with switching times around 1 ms. That is what is needed to liven up the world and get the Old Fuddy's to allow 9600 baud packet operation. It will happen regardless of what the Old Fuddy's say. I wish that I could be one of the Beta testers. I will say this, I hope that all of the parts are supplied with the proposed kit to make it easier building. I know that when they go onto production, I will be getting one and I am quite sure that many other people will be doing the same thing too.

There are many groups here in Los Angeles that say that 9600 takes up too much bandwidth. Well, the funny thing is that

these so called "communciations experts" had better listen and learn. I ran some tests and did the paperwork to back it up and I even discussed it with one of the engineers at my place of employment and he said that my figures were all wrong. Now it is time to get technical. The operational classification for VHF FM is 16K0F3 which stands for 16.0 KHz bandwidth using FM modulation. The formula for bandwidth is BANDWIDTH = 2 * (HIGHEST MODULATION FREQUENCY IN Hz) + 2 * (FM DEVIATION IN Hz). If you plug in 3000 Hz maximum modulation frequency and a maximum deviation of 5000 Hz you yield 2*(3000) + 2*(5000) = 16000 Hz bandwidth. Now lets transfer this over to 9600 baud packet. Packet is send over the air using NRZI encoding which means that the maximum transition rate for the signal will be 4800 Hz. If you use a 3 KHz deviation at the maximum modulation frequency of 4800 Hz and the equation from above you yield a result of 15.6 KHz bandwidth which is within the channel requirements. This even pans out on the spectrum analyzer. The modulation envelopes cover the same amount of spectrum. So, when you get some "expert" saying that 9600 baud will not work on a voice channel, show him this. He might learn something.

Just remember, if you do run 9600 baud, keep that deviation DOWN! The deviation will have to be set up with a deviation meter. If the deviation gets too high, you will take out several channels and that is not how you win friends and influence people.

## SOAP BOX

There was some mail floating around to the various PBBS's in the country concerning the age-old discussion concerning "ALLUS". This message that I read was concerning another guy who was caught sending 7 messages in one day addressed to "ALLUS" of a story. WHAT A WASTE!! I still think that the "ALLUS" designator get dropped from all systems. If someone wants to send a for sale ad of their handheld microphone that he is selling for $5.00 to "ALLUS" then let him or her generate 50 messages. The monotony will get to them fast. Children will always be children and I guess that there will have to be safeguards installed to limit garbage traffic.

**de Richard, N7NKO**
n6nko@n6nko.ampr.org[44.16.0.114]
n6nko@wb6ymh-2

# DXER OF THE MONTH

## *Bob Meyer, WA9AKT*

**Bob Meyer, WA9AKT,** has just been awarded CQ WAZ number 1 for the 9th call district. Congratulations to Bob on his achievement. According to his records, Bob started chasing DX in 1976 and it has taken this long to reach this WAZ goal. For those of you who are new to the Digital modes and are interested in chasing DX, please take heed that patience and perseverance are necessary prerequisites to reaching such a goal.

Bob has been married to Kathy for 22 years and they have two children. Bryan, is age 12 and Amie (KA9WLJ) their daughter is age 16. Bob works as Operations Planning Manager for a large corporate data center. He was first licensed at age 16 and now holds an Extra Class license. This October will mark 26 years as an Amateur radio operator. Bob is also a member of NIDXA (Northern Illinois DX Association) which handles the 9th call area QSL bureau as well as supporting various DX activities. This also includes a 2 Meter DX Spotting Repeater and a 220 Packet Cluster.

Bob's station was started in 1976 with a HAL ST-5, Model 15 Printer, Drake B line, Heathkit SB-220 and a three element tribander at 50 feet. But times have changed and he now uses a PK-232, IBM PC computer, Kenwood TS-440S, Alpha 86 Amp and a four element tribander at 65 feet.

As Bob tells it, DXing from the heart of the mid-west (Illinois) is a unique experience. In pileups, you wait your turn whether the DX station is from the East or the West. In the first case, he must wait for the East coasters to finish and the second, wait for the West coasters. Imagine trying to work 3W1A (Vietnam) or XW8KPL (Laos) through the West Coast pileups or maybe calling 5Z4BH in rare Zone 37 through the East Coast pileups. Bob feels his achievement is unique in this regard and I'm inclined to agree. The CQ WAZ list of only 31 attests to this fact.

Bob needed Zone 26 last and was able to work Jiro (JA3UB) from XW8KPL (Laos) on February 12, 1990. He received his QSL card in about three weeks but added it was a very long three weeks. Each day he rushed home during lunch break to check the mail and is most thankful to Jiro for being so prompt with his QSL.

Sunspots being what they have been this past year, Bob was able to work the last five Zones during this period. As an example of how difficult it can be to reach such a goal, Bob sights the following: Zone 2 -- not much activity! Worked VE3DYX during a RTTY Contest. Zone 19 -- Several Russians on but they are rare and hard to find. QSLs take a long time. Zone 23 -- Only a couple of active stations, very rare, finally worked BY9GA. Zone 23 -- only two active stations found, BY1QH and VS6AK (worked them both). Zone 26 -- Missed 3W1A (Vietnam) but waited for XW9KPL. Zone 34 -- Was finally able to snag SU1EE. Zone 37 -- Worked 5Z4BH several years ago during a contest.

Bob has done an outstanding job here in reaching this goal and deserves this recognition. His activity in the NIDXA group which sports many DXers but mostly SSB or CW folks, will make him a popular guy at meetings in the future. In fact maybe Bob will convert some of the SSB and CW operators to RTTY. There is a lot of activity from DX stations these days what with the advent of all the multimode controllers on the market. Here in California, I know of some SSB and CW operators who have taken up the challenge of RTTY in search of DX awards.

I would guess that now Bob will encourage his daughter, Amie, to chase DX and maybe be the first to have two CQ WAZ certificates in the same family. Whatever his next goal may be, Bob will certainly not give up, taking almost 14 years to reach WAZ, is real perseverance. Again congratulations Bob!

# ANARTS

## AUSTRALIAN WORLD WIDE RTTY CONTEST 1990

### Test Period:

Saturday 9th, June 1990, 0000 UTC to Monday 11th, June 1990, 0000 UTC

*Not more than 30 hours of operating is permitted for single operator stations. Non operating periods can be taken at any time during the contest.

* Multi-operator stations may operate the entire contest period.

* Summary of operating times must be submitted with each score sheet.

### Bands:

3.5, 7, 14, 21, 28

### Modes:

All digital modes permitted. (RTTY, AMTOR, PKT)
Note; No satellite operation permitted.

### Classifications:

(A) Single Operator (one transmitter)

(B) Multi-operator (one transmitter)

(C) SWL Printer

### Messages:

To consist of; RST; Time (UTC); & Zone

### Scoring:

As per Zone Chart, Multiplied by the number of countries worked, multiplied by the number of continents worked (max 6). After the above calculations, world stations add 100 points for each VK worked on 14 Khz, 200 points for each VK station worked on 21 Mhz, 300 points for each VK station worked on 28 Mhz, 400 points for each VK station worked on 7 Mhz, and 500 points for each VK station worked on 3.5 Mhz. *(Example)* 720 points from zone chart X 29 countries worked X 5 continents worked = 104,400 points plus (+) 6 VK stations worked on 14 Mhz (that is 600 points) giving a grand total of 105,000 points. A station may be worked only once per band, but may be worked on another band for further multipliers. (Zone chart, see March issue page 9)

### Countries:

Country count as per ARRL list of countries, except that each VK, JA, VE, VO, W/K districts count as separate countries. Contacts with one's own country count as zero points for multipliers.

### Logs:

Logs must show in this order;

1. Date,
2. Time (UTC),
3. Callsign of station worked,
4. Message information sent (RST/TIME/ZONE),
5. Message information received (RST/TIME/ZONE),
6. Points claimed.

### Closing Date:

Logs must be received by the Contest Committee by September, 1990. The address for logs is:

**W.J. Storer**
**55 Prince Charles Rd**
**French's Forest, N.S.W.**
**2086, Australia.**

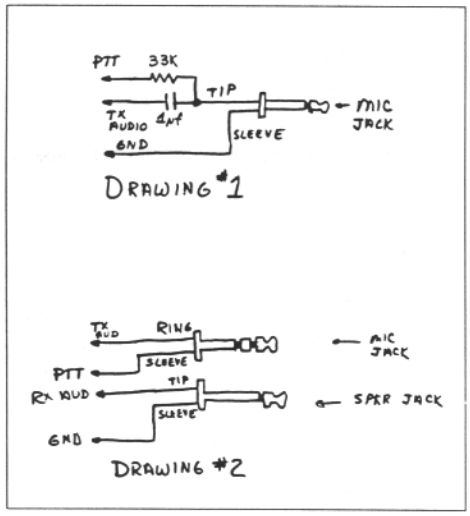
### Summary Report:

Summary sheet must show callsign of station, name and address of operator, bands used (a separate log is required for each band), the points claimed for each band, number of VK stations worked, total points claimed and signature/s. Multi-operator station logs must contain the signature and callsign of each operator.

### Awards:

Awards will be issued for 1st, 2nd, and 3rd on world basis and also on a country basis. The judges decision regarding the positions in the contest will be final and no correspondence will be entered into regarding same. Logs become the property of the Contest Committee on completion of checking.

**de Bill, VK2EG**



# SARTG

## Scandinavian Amateur Radio Teletype Group

### 20th SARTG World Wide RTTY Contest 1990

We have the great pleasure to invite you to join our celebrating the 20th anniversary of the S.A.R.T.G. by joining the 20th Worldwide RTTY Contest, run by the Scandinavian Amateur Radio Teleprinter Group. New for this year is that all the digital modes, Baudot, AMTOR, ASCII and Packet may be used. Also, please note that we have adopted the USA habit of counting first VK, VE and USA contacts as a country with each call area then continuing multiplier count.

### RULES:

**Test Period:**

0000 - 0800 UTC, Saturday, August 18th
1600 - 2400 UTC, Saturday, August 18th
0800 -1600 UTC, Sunday, August 19th

**Bands:**

3.5 - 7 - 14 - 21 - 28 MHz

**Modes:**

Baudot, AMTOR, ASCII and Packet (not via digipeater). The same station may be contacted once on each band in one of those modes for QSO and multiplier credits.

**Classes:**

A) Single Operator, All Bands
B) Single Operator, Single Band
C) Multi Operator, Single TX, All Bands
D) SWL stations

**Message:**

RST and QSO number starting with 001.

**QSO Points:**

QSO with own country five (5) points, other countries in own continent ten (10) points, other continents fifteen (15) points. In Australia, Canada and USA each call district will be considered as a separate country.

**Multipliers:**

Each country as listed on the DXCC list will count as one (1) multiplier on each band. Each Call district in Australia, Canada and USA will count as additional one (1) multiplier on each band.

**Scoring:**

Sum of QSO points X sum of multipliers = Total score. SWL's: Use the same rules for scoring, but based on stations and messages copied.

**Awards:**

To the top stations in each class, country and district mentioned above, if the number of QSO's is reasonable.

**Logs:**

The logs must be received by October 10th 1990. The logs to contain: Band, Date/Time UTC, Callsign, Message sent and received, Points and Multipliers. Use separate sheet for each band and enclose a summary sheet showing the scoring, class, YOUR CALL, NAME and ADDRESS. In case of multi-operator stations, the CALLS or names of all operators involved.

Your comments will be very much appreciated!

**Send Logs To:**

***SARTG Contest Manager***
***Bo Ohlsson, SM4CMG***
***Skulsta 1258***
***S-710 41 Fellingsbro***
***Sweden***

## 1989 CQ/RTTY JOURNAL CONTEST WINNERS

**TOP SCORE CATEGORY**

Single Operator

World All Band

| | |
|---|---|
| **TG9VT** | **1,038,015** |
| T77C | 875,350 |
| HD5Z | 776,195 |
| RW9C | 756,756 |
| OK2FD | 743,175 |
| 5K1R | 725,620 |
| IK5CKL | 682,746 |
| SM4CMG | 643,566 |
| W2FG | 572,684 |
| W3FV | 517,816 |

World Single Band

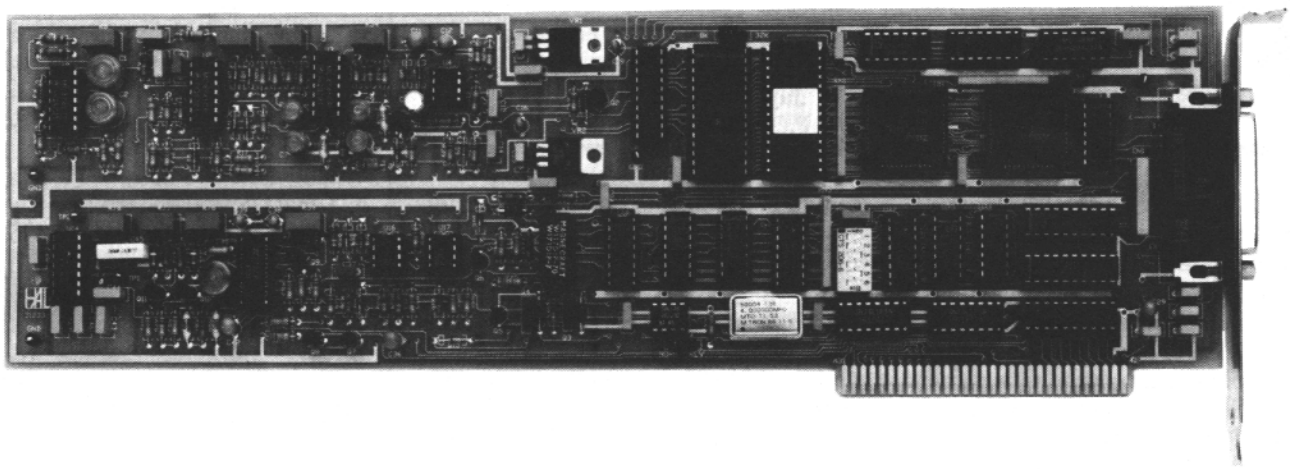
| | | |
|---|---|---|
| **YU2W** | **246,272** | **14 Mhz** |
| LZ1KDP | 197,127 | " " |
| 4M5RY | 176,880 | " " |
| G4SKA | 172,235 | " " |
| FF1NZH/YV5 | 159,639 | " " |
| NB2P | 143,136 | " " |
| KE0KB | 138,205 | 21 Mhz |
| CE6EZ | | |
| 122,512 | " " | |
| NJ0M | 111,144 | " " |

TOP SCORES
MULTI OPERATOR

| | |
|---|---|
| **HD8EX** | **2,290,860** |
| UQ0GZW | 1,726,108 |
| LZ9A | 1,399,032 |
| AT0J | 1.006,343 |
| YT3T | 907,882 |
| RL8PYL | 829,704 |
| DL0GK | 654,080 |
| UZ3AYR | 534,130 |
| JJ3YBB | 517,824 |
| VE7ZZZ | 477,085 |

*Complete results will be published in the July/August issue of the Journal. Rules for this year's contest will also be published in the July/August issue. The 1990 Contest dates are September 29 thru September 30. Make your plans to enter NOW and good luck to all. Send SASE for log sheets to either CQ magazine or to the Journal office.*

# A Winning Combination . . .
# The PCI-3000 and SPT-2 from HAL!



The HAL PCI-3000/PC-AMTOR system is designed to put your PC on the HF bands with outstanding performance at an affordable price. Amtor allows you to get through when other methods fail. If you've ever been DX-ing with someone on Amtor when 20 meters dies out in the evening, you know what we mean. Things may slow down, but you can usually keep up the QSO!

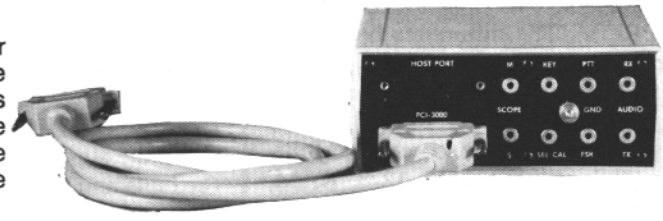
The PCI-3000 doesn't limit you to Amtor. You also get high-performance Baudot and ASCII RTTY, CW, and Search Mode. Search Mode lets you simply tune in the signal—we take it from there. The PCI-3000 automatically finds the correct code, speed, and polarity. No more guessing!

If you want to communicate on HF, do it right with the PCI-3000! Call HAL Communications—your AMTOR source—and put your PC on the air today!


## SPT-2 Spectra-Tune:

For ease of tuning your PCI-3000, add the SPT-2 Spectra-Tune. The Spectra-Tune lets you tune in CW and RTTY signals quickly and accurately with a calibrated linear 30-segment bar graph. The bar graph represents a 600 Hz range of the audio spectrum, centered at 2210 Hz for RTTY and AMTOR, and 800 Hz for CW. Calibrated marks indicate the proper frequency for AMTOR, RTTY, and CW tuning.

A cable is included with the SPT-2 for providing power and control from the PCI-3000. The rear panel of the SPT-2 provides convenient "RCA" phono connectors for all radio connections. This avoids having to make radio connections directly to the PCI-3000. Enhance your PCI-3000 system with the SPT-2 Spectra-Tune Today!




**HAL Communications Corp.**
**P.O. Box 365**
**Urbana, IL 61801**
**Phone (217) 367-7373**
**FAX (217) 367-1701**

PCI-3000/PC-AMTOR with software **$395.**
SPT-2 Spectra-Tune with cable **$169.**
FIL-1 Amtor/RTTY filter (installs in SPT-2) **$69.**

(Low tone export models available.)

CIRCLE 58 ON READER SERVICE CARD

# SOFTWARE

**Jay Townsend, WS7I**
**P.O. BOX 644, Spokane, WA 99210**

This month we take a look at some terms, techniques, and list some software for those getting started in the digital modes. Presently there are three main digital modes in use by amateurs: Baudot (RTTY), Amtor, and Packet. Not to argue the point, but others may well think that CW, FAX, and SSTV should also be included! Also, I will cover some thoughts and ideas that came to mind after the last contest.

## FOR STARTERS

Software is what computer processor units (CPU's) use to change the various data communications codes, along with associated start-stop pulses, into plain language symbols. Software gets its name because, unlike the mechanical, electrical circuitry of the computer, the instructions given to it are soft. Those of us known as programmers create a set of instructions, procedures and functions and call it a program.

Aha! You have it now. The difference that we find in most of the Terminal Units now found on the market can be explained by where the software is located. This leads us to another definition: Firmware. This is software that is contained in or on a computer chip or series of chips (ROM) Read Only Memory, (PROM) Programmable ROM, (EPROM) Erasable PROM. The difference between a Smart TU and the regular TU is that the smart TU has either software or a total computer contained within the box. So you will find that the common Multi-mode TU's, PK232, MFJ 1278, KAM, HAL PCI-3000, and others most often will have a Z-80 micro processor on board. So what we end up with is a TU talking to a computer which talks to a computer or a dumb terminal. Dumb terminal is just a video unit with a keyboard and RS-232 communications capability. The Multi-mode sends ASCII (standard definition for characters transmitted between data devices) characters which are displayed (printed) on the CRT screen.

There is another small difference between some of the Multi-mode devices and the old standard TU's. Often times there is a time delay between the one computer and another which may be running a program to help deal with the data. So what you see on your screen may or may not be at the exact moment in which it is actually received. This delay (buffering) explains why some computer software is able to do things that others cannot.

Another method exists of decoding the digital program, and that is the older less computer intensive approach which preceded the new Multi-mode devices. Since Packet, and Amtor were not as popular, you will find that some had RTTY and some Amtor but very rarely did all three exist. The RTTY demodulator (TU) converts the RTTY tones into keying pulses and a Terminal program converts the pulses into ASCII characters. The only difference between a telephone modem program and an Amtor or RTTY program is the codes that it is capable of converting. In fact those of you with one of the early Hayes 1200 Modems will find information in their manual on how to copy RTTY signals with the Hayes modem.

So there you have it, the terminal program just decodes the pulses and makes regular old letters out of the tones. Well, that's the starting point, but then comes the bells and whistles that programmers like to add and users request -- Nah ...Demand!

Those bells and whistles are the things that I look at when I review the software for various modes in the column that I write.

Next issue, we will take a look at some of the specific programs that are available both commercially and in the public domain for the digital modes. This will not be a review, but rather a short listing of whats available out there. And the answer to a reader about the older TU's that are available is check your local Hamfest or just call some of the folks in the Classified Ads of the RTTY Journal (especially Henry Radio. I got a great ST6000 there!) Seen just this year in Washington Hamfests -- Flesher TU170 $25, Hal DS3100 under $100 (what a steal NQ7M got it!), AEA CP-1 $75 and on and on. I think that you will find most of the digital gear is functional, I have gotten lots and never had a problem -- Lucky?

## DREAMING!

You know, it's a funny thing, but every time I finish a contest, the next urge that hits me, as I sit down to enjoy a Scotch Whiskey, is how can things be improved for the next contest. This March's BARTG contest was no different. After doing another Multi-op stint, I was sitting in my living room when it struck me that for the first time in ages and ages most of the stuff that was used worked to perfection.

However, there was a little problem with the software that was used at the Multi-Op station. Things there have been changed over the years, and we are now using IBM clone computers. Thus, stuck with IBM software. If you have been following the reviews that I have done, there are quite a few nice products available, however, none works well enough for serious contesting. Here I am addressing SENDING software not LOGGING programs.

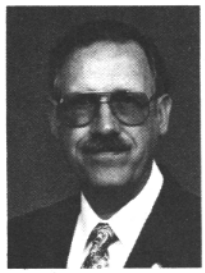
IBM's must be used because it precludes having to re-build the station before and after each contest. But, only software like the MBA-TOR works well enough. Ah, it finally came to me after about an hour. The answer is to write some new software.

After thinking about this project, it seems to me that I am able to write down the specifications of how the software should function. Bells, whistles, and functions came pouring out of my mind and into the word processor. Having won three or four world RTTY championships really helps.

Now who is going to write this program was the next question and happy am I to report that a software author has volunteered to program and market this contest program. What we are seeking is a bunch of input on how YOU the contest user would like things to work. Now we are not promising anything at this point, but if you have suggestions, scratch them down on a piece of paper or on a disk and forward them to me. They will be carefully considered for additions to the program.

Once before an idea was hatched in my living room and from that the ARRL RTTY Roundup grew. Perhaps this is another such thing?

Until next time, when you fire up for the VOLTA and ANARTS contest, think about how you would, could, should improve that RTTY contest software. Look for WS7I in the upcoming contests. 73. **de Jay, WS7I**



# MSO'S

**Dick Urhmacher, K0VKH**
**212 48th St, Rapid City, SD 57702**

Hi Gang! Spring at last, the robins are chirping, the grass is growing, and I'm off to the Dayton HAMVENTION. I thought about delaying this months issue of the MSO Column until I returned from Dayton, but since this issue is dedicated to basic digital techniques, I'll include all of the comings and goings of Dayton in the July/August column.

My purpose in this months column is to attempt to dispel some of the mystery surrounding MSO/CBMS systems. Hopefully after reading this article there will be some who will want to try their hand at this worthwhile digital mode of operation.

The letters MSO are an abbreviation meaning Message Storage Operation. It was coined by the HAL Communications Corporation for use with their MPT3100 System. The letters CBMS are an abbreviation for Computer Based Message System, and usually are used to indicate that the system is some form of a personal computer, with a digital interface. Both systems afford basically the same features, they just go about it in different manners. MSO's are normally thought of as dedicated devices, where CBMS's can be thought of as computers that can fill other needs in the Ham Shack, as well as providing message storage services. The first true over-the-air, (versus landline), message storage systems evolved in the late 1970's, and early 1980's, primarily on 20 Meters, although they soon spread to most all of the digital areas. Compared with todays full service digital systems, they were pretty crude devices, although we did have a lot of fun with them. I hope to dispel the thought that MSO/CBMS's are deadly, serious business. They are not! They are as much a part of Amateur Radio as ragchewing, DX'ing, RTTY Pix, CW, SSTV or (gasp!) SSB. The System Operator (SYSOP) who maintains a worthwhile MSO/CBMS does so because he enjoys providing that service. He hopes that using his system will not only be useful to the remote user, that it will provide a service to Amateur Radio, but above all it will be fun!

It is with those thoughts in mind that most SYSOP's devote their time, energy, equipment and dollars to providing this service. So, it is with great hope that SYSOP's bait their hooks, hoping to attract users to their systems. If I can get any point across in this column, it is that we were all novices in the use of digital systems at one time, and the new user should not let his unfamiliarity with MSO/CBMS's deter him in the slightest in using these systems. They are maintained for YOUR use, and since each of them have extensive "Help" features, it will only be a short time after you start using the systems, until you will be an "Ol' Pro" at it! Secondly, in my 34 years of being an Amateur Radio operator, I'm convinced that there's no other mode where you will find more helpful folks!

There are some basic guidelines that will help the new user in learning and enjoying MSO systems. For instance:

1. As in all modes of Amateur Radio, please listen before transmitting on a MSO frequency, and ASK if the frequency is in use. Due to atmospheric conditions, you may be able to hear the MSO well, but not hear another station utilizing it. Listening for a short period will save lots of embarrassment! NEVER EVER interrupt a QSO on or near the MSO frequency just to facilitate your use of the MSO! The MSO will be there day in and day out, and your use of the MSO has no priority on the frequency.

2. The stability of your transmitting/receiving equipment is very important. Let your equipment warm up a bit before attempting to access one of the MSO's. DO NOT use "RIT" (receiver incremental tuning) when utilizing one of the MSO's. Most of the MSO's have about an eighty (80) Hertz bandpass where you can reliably issue commands to the system. Once you do access the MSO, re-zero your equipment so that it is dead centered in the MSO's passband. (Believe me, a good RTTY tuning device, scope, etc., is worth its weight in gold, not only for MSO work, but for just general digital operations). If your transceiver has "memory", memorize the MSO's frequency in your rig. You will be able to return to it day after day, and feel confident that you can access the system.

3. The MSO "access code" is usually made up of the letters MSO, followed by the last three letters of the station operators callsign. For instance, the access code to my MSO is: MSOVKH. Some of the CBMS systems do have an automatic "timeout" feature, which will close the MSO after a specific time period has elapsed, without a valid command being received by the system. Others however, remain in the "open" condition until a valid ".EXIT" command has been received. Consequently, it is important that once you open a MSO/CBMS, that you also close it when you are through. Not closing it means that it will respond to commands given to other MSO's on the frequency, causing lots of interference and frustration!

4. Although it appears complex, issuing commands to a MSO/CBMS is really quite easy once you understand the principle. MSO's only respond to commands that are fully left-justified, (received by the MSO on the left-most margin), and are preceded by a "period," (.RY, .EXIT, .DIR, etc). Left-justifying the command, and placing a period before it, causes that command to become very distinct from ordinary text received, thus causing the system to execute that command. Left-justifying commands is very easy. Simply place two or more CR/LF (carriage return/line feeds,.....or presses of the ENTER or RETURN key), before each command. Simple as that sounds, not left-justifying commands is probably the number one reason that new users to MSO systems fail in their attempts to command the system. Make sure that you precede each command with a "period", and the system will work flawlessly for you.

5. Each of the MSO/CBMS systems has a "Help" command. New users may feel somewhat intimidated by all of the commands, but by reading the Help file it will all become clear. If you have a printer attached to your digital system, please turn it on while reading the Help file, for future reference.

6. Learn the intricacies of the MSO/CBMS system. The "expert" mode will save you (and others waiting to use the system or frequency), lots of time. For example, most of the systems have a "Directory Scan" feature. This feature allows you to scan the system directory for any sequence of numbers or letters, without having to list each and every file in the Directory. For example, if I want to see only files that have the last three letters of my callsign in them, I can issue the command .DIR VKH, and the system will only output files with the letters "VKH" contained in them.

7. Be as brief as possible in your notes that you leave for others. I know its tough to get your point across with minimal words, but the longer your note, the longer the MSO must be on the air to re-transmit your note, the longer the frequency is tied up, the warmer the equipment gets, etc.

8. Finally, we walk a thin line with the following comments. There is no such thing as a "reserved" frequency in Amateur Radio. You, and hundreds of thousands of other folks, have equal access to all frequencies allocated to Amateur operators. If you hear a QSO on or near your favorite MSO/CBMS frequency, let them finish BEFORE you access the system. Secondly, no doubt you will meet friends and acquaintances on your favorite MSO frequency. The temptation is to rag-chew while the opportunity exists. If you can use a bit of judgement in the length of time you rag-chew on your favorite MSO frequency, it will allow others who may be waiting on the frequency the opportunity to use the system. The days of crystal control are pretty much gone. QSY'ing a few Hertz one direction or another will solve the problem.

MSO/CBMS's can be useful in keeping contact with friends on a world-wide basis. They are easy to use, reliable and provide a service to all that need them. Don't be intimidated by these electronic marvels.....jump in there and get your feet wet. It will be a pleasurable experience. Got a problem, question or pet peeve about MSO's? That's what this column is all about. Drop me a line either directly to my address, to The RTTY Journal, or in one of the MSO's, and I'll do my best to answer. Have fun on the MSO's!

## UPDATE, JERRY TRICHTER, WA1IUF

Our good friend Jerry Trichter, WA1IUF, continues to make some improvement with his medical difficulties. Frank Moore, WA1URA, reports that Jerry has a long way to go, and needs our encouragement. Jerry has some paralysis on his left side, has difficulty with his neck, and his short-term memory is poor. For those of you who are not acquainted with Jerry, he was one of the pioneers in MSO/CBMS mailbox service on 20 Meters, starting back in the late 1970's. Jerry's friendliness, and always willing to help attitude, has made him friends throughout the world. We all can help Jerry in his recovery, by dropping him a card or short letter in the mail. As I found out during my recovery from heart surgery, there's nothing like hearing from old friends when you're on the sick list. Let's brighten up Jerry's day a bit by dropping him a card or letter. A small effort on our part will pay handsome returns on his end! Jerry's address is:

Jerry Trichter, WA1IUF Branford Hills Health Care Center 189 Alps Branford, CT 06405

Hopefully I will have some concrete information about the ARRL petition to the FCC concerning "unattended digital operations" in the next issue. The time limit for comments to the FCC has recently been extended, and it appears that the ARRL is attempting to find at least one poor soul who favors this unrealistic petition. That's it for this week Gang. --73-- and I'll see you on the MSO's

**de Dick, K0VKH**

■

### LOST TRACK OF MY FRIEND NEED HELP PLEASE!

I have lost track of an old friend, and fellow RTTYer. His name is John Pitts, Jr., W6CQK. He was last listed as living in Redwood City, CA. He may have upgraded his call and/or moved. If you can help me please write to me at the following address. **Byron H. Kretzman, W2JTP/7, 5220 217th St S.E., Woodinville, WA 98072.** ED: *Both Byron and Jack were pioneers in RTTY. Byron's RTTY handbook still sets on the shelf of many Ham shacks. If fact, I still have mine although somewhat tattered from much use in days gone by.*

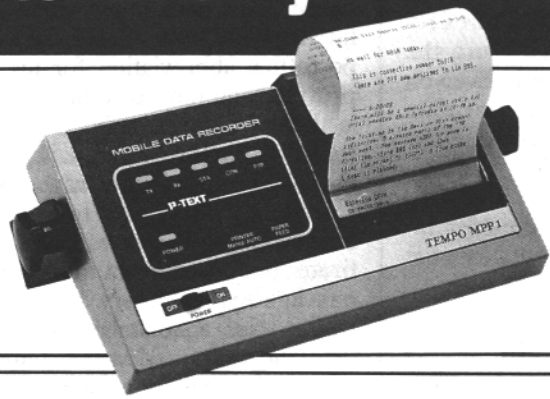
### HELP NEEDED!

Bill Soble, W3QXT is looking for someone who can help him with his set-up. Bill is using a TI/99-4A computer with a Kantronics TNC (Model KPC-2). He would like to get in touch with Hams using this system on two Meters. Write to him at: William Soble, W3QXT, 9357 Hoff St. Philadelphia, PA 19115

### SUMMER VACATION SCHEDULE

For those of you who are realatively new subscribers, let me explain the Summer schedule. The Journal is only published ten (10) times per year. We double up the May/June and July/August issues which gives all the Staff members the Summer off. So your next issue will not arrive until the latter part of August. Have a great Summer, we will see you in the early Fall.

# HENRY RADIO IS THE PLACE
# . . .THE BEST PLACE
# to fill all your data communications needs

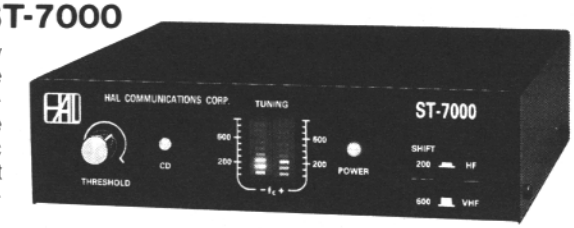


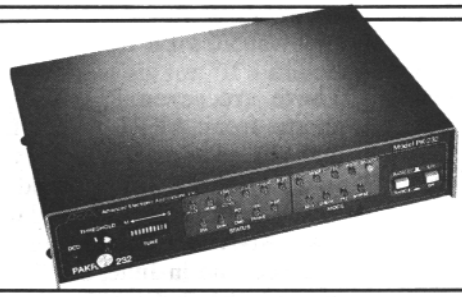

## The TEMPO MPP1

. . .a unique new mobile data printer, includes a packet controller and a 13.6 VDC printer that interfaces with any mobile radio. in a recent user test it proved to have about twice as much audio level range tolerance as other TNCs. It is also an ideal unit for emergency work and a commercial version is perfect for dispatching service, emergency and police vehicles.

## HAL Communications' ST-7000

HF-Packet Modem. . .a high performance modem designed specifically for 300 baud HF-Packet. It offers no-compromise performance to assure optimum operation under the most demanding signal conditions. Techniques developed for government and military use are used in the ST-7000. AGC-controlled AM signal processing provides a wide dynamic range. All filters and detectors are optimized for 300 baud HF-Packet. It offers the 200 Hz shift mode and a wider 600 Hz shift mode, each supported by separate 6-pole input filters and a 40 db AGC system.

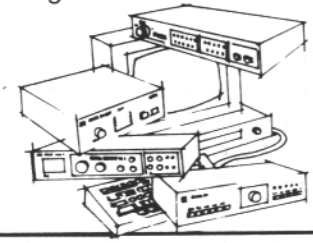



## The PK-232 by AEA

. . .the only controller offering Morse Code, Baudot, ASCII, AMTOR, Packet, and facsimile Transmission & Reception plus the ability to monitor the new Navtex marine weather and navigational system. . .7 modes in one controller. The PK-232 makes any RS-232 compatible computer or terminal the complete amateur digital operating position. All decoding, signal processing and protocol software is on ROM. Only a simple terminal program (like those used with telephone modems) is required to interface the PK-232 with your computer. **Watch for the new and exciting AEA FSTV-430. Have fun on amateur TV!**

*Obviously, we can fill in a system that you have already started. Or we can furnish a complete system to fit your needs and budget. For example, here's some suggestions for the amateur just entering the exciting field of data communications, or: for the amateur who wants the best available.*



**NO. 1** For the fun (and very affordable) mode, VHF Packet, AEA PK-88 with personal mailbox, 8K programmable memory and TCP-1P compatability.
For serious 20 M world-wide DXing on Packet, 200 or 600 Hz shift. . .add the superb HAL ST-7000.

**NO. 2. . .top of the line!** The HAL ST-8000 or HAL ST-6000 and AEA's PK-232 . . .the winning combination. You can't do better for all-mode, all-band enjoyment of hi-speed data communications.

**If you have any questions concerning these units, or would like to discuss your requirements with a knowledgeable specialist, please call or ask for Fred Daukantas, N6SFD. We also carry a large selection of excellent commercial products for data communications and emergency systems as well as a complete inventory of amateur equipment and linear power amplifiers.**

HENRY RADIO 61 YEARS OF SERVICE **Henry Radio**

2050 S. BUNDY DR. • LOS ANGELES, CA 90025 • (213) 820-1234
**Toll free order number: (800) 877-7979 TELEX: 67-3625(Henradio) FAX (213) 826-7790**

# CONTESTING

**Hal Blegen, WA7EGA**
**2021 E. Smythe Rd, Spangle, WA 99031**

## THE MORNING AFTER

Mother's Day was a killer. I'm sure it was typhoid... I had major tremors in my hands as I tried to reach the invisible ice pick in my left shoulder. My ears were ringing. In the mirror, a pale, grizzled visage stared back from red-rimmed, bloodshot eyes. My entire digestive track was out on the picket line carrying signs and chanting "NO MORE COFFEE!" The medical dictionary suggested a rare asian disease transmitted by water buffalos but, judging by the way everyone treated me, my guess is typhoid. When regular people catch some horrible disease, they get sympathy and bed rest. At 9am, I was roused from my bed with the imperative, "Clean up (said with a wrinkled nose). The family will start arriving for brunch in 20 minutes." Me and Don Rickles... Any spare sympathy always goes to your spouse. For instance, try explaining it to a neighbor. I say, proudly, "For the previous 24-hours I have been engaged in a highly demanding, world-wide competitive event requiring skill and endurance combined with leading-edge technology!" The response will be something intelligent and supportive, like, "Is that what made all the green lines on my TEEVEE this weekend?"

## DX

Part of the allure of contesting is DX. When only one rare DX station is active, the pileup is humongous. During contests five or ten uncommon, DX stations may be operating at any time and be on the air for the duration. Contesting increases the odds of adding to your country list.

## EQUIPMENT

Forget the idea that a contest station looks like an equipment manufacturer's 4-color magazine ad. Those pictures remind me of toothpaste ads where the models all have too many teeth. Even on RTTY, which requires more gear than other modes, it isn't how much equipment you have, it is how well you use it.

Without prowling through all your instruction manuals, see how you do on the following quiz:

(1) Can you quickly load, edit, send and erase buffers available to your RTTY software? How about interrupting a buffer with live copy from the keyboard?

(2) Can you change speeds or invert only the receive mark/space polarity?

(3) If a DX station says "UP 5", are you able to quickly split your receive and transmit frequencies? (The first station to lay his call on the new spilt usually gets through.) How about listening on the transmit VFO to see where he is working? Do you ever get confused and transmit on the wrong freq?On SSB, that little trick can earn you unwanted wall paper from uncle Charlie (the FCC).

(4) Are your filters narrow enough for crowded bands or does a contest weekend sound like a highschool orchestra tuning up. A 250 HZ filter is relatively inexpensive way to boost the RTTY performance of your receiver. Be sure that your pass band tuning will operate with a particular narrow filter or you may find that the audio tones are unusable for RTTY tuning. Talk to the manufacturer to be sure as some rigs will not operate in SSB mode with a narrow filter (for AFSK).

(5) If you have a beam antenna, do you have to reach around the ashtray, over a cup of coffee and behind the keyboard to get to the control? Anything that you do 500 times in 24 hours should be scrutinized for operator comfort.

(6) How long does it take to change bands? Taking stations from one band to another is a good way to increase multiplier count. How effective are you with spotting (looking for multipliers) on another band?

(7) Although scope tuning indicators are faster and surer, almost all LED displays are usable with practice. Do you always know whether you are tuned low or high without having to fumble around?

## OPERATING THE CONTEST

Any (licensed) amateur should be able to figure GMT time, know which CQ zone he lives in, his ARRL section, the postoffice abbreviation for his state or province and how to count by ones. This is all the information that is ever needed for any of the RTTY contests. If you read the rules you can figure out the exchange. Ham radio is supposed to be a hobby of trained communicators. This factor motivates our government to protect antennas against arbitrary height rulings, frequencies against commercial intrusion and our freedom to communicate with each other on a trivial basis, as we please. When you discover a contest roaring away on Saturday afternoon, don't shut off the gear in disgust and stomp out of the shack! You can learn more about effective operating technique in an single afternoon of contesting than in years of casual operation.

## TACTICS

There are seven RTTY contests to choose from: ARRL ROUNDUP (US) in the first weekend of January, BARTG (British) on the 3rd weekend in March, VOLTA (Italian) on the 2nd weekend in May, ANARTS (Australian) about the 2nd weekend in June, SARTG (Scandinavian) the 3rd weekend in August, CQWW (US) at the end of September and WAE (German) in mid November.

The most important tactical decision, beyond all others, is selecting the contest and the class within the contest that best fits your resources and operating style. Since the first time out, you really don't have enough information to do this, try to dedicate some time to each of them. Every contest has an individual flavor and a distinctive scoring and operating strategy. Good decisions require an understanding of band conditions and the operating habits of the other operators. If everyone goes to 80 meters at 0200 on Friday night, showing up on Saturday is a

waste of time. Most RTTY contests have required rest periods. Choosing a period which will least affect your score is also a tough call. Although the general rule is to operate the highest band open, the WWV reports at 18 minutes after each hour can be very helpful in deciding when to take rest periods and which band to operate. (ARRL Handbook explains WWV broadcasts).

A DX hound will spend an hour, if necessary, trying to bust one pileup. The contest operator cannot. A good compromise is to punch the DX's frequency into a memory and jump back for a couple of quick calls while continuing to mush-on with the contest. You may eventually still get through the pileup but you will have minimized the time spent waiting in line.

In the same vein, when rates slow and you are moving across the band answering CQ's (hunt and pounce), you can waste a lot of time waiting for a station to finish a QSO. Enter the frequency for the first QSO you find into VFO-A, switch to B and continue to tune. When you get to the next available QSO keep switching between the two VFOs and grab the first one that finishes. Leap- frogging between QSOs can double your rate.

NEVER argue about a frequency. Unspoken rule number six sez: "If a station CAN take your frequency away from you, he WILL." I have seen big gun stations (who should know better) squabbling and calling each other names while both were losing valuable time. If a station starts calling CQ on "your" frequency, move the beam his way and work through him for a few calls so he at least knows you are there. During the pauses between CQ's, use your other VFO to prospect for a new spot. If he doesn't take the hint and there is no clear space anywhere, either change bands or go hunt and pounce.

## SIX WAYS TO AVOID STANDING OUT AS A NEW GUY

(1) DO NOT START EACH TRANSMISSION WITH A STRING OF RYS. Under extreme conditions, like after a nuclear war, RYs might help the receiving station tune your signal. Mostly they waste time and signify brain damage.

(2) DO NOT SEND FIFTEEN REPETITIONS OF THE EXCHANGE. If you copied his exchange the first time then send your's only once. If find you get a lot of requests for repeats, send it twice.

(3) DO NOT KEEP REPEATING THE CALL LETTERS. The station you are calling knows who he is. Unless he sends something stupid like, "WA7EGA are you calling me?", don't bother sending his call. Once he has your call correct, quit sending calls altogether.

(4) KEEP TRANSMISSIONS SHORT. Short transmissions keep the frequency clear by reducing skip-zone interference and allow you to run approximately five times the normal RTTY power rating for your amplifier before it slags. The proper length is the minimum transmission necessary to complete the exchange.

(5) USE PRE-LOADED BUFFERS WHEN POSSIBLE. Machine speed transmissions are easier to copy than hand typing. Even if you are an excellent typist, the use of standard buffers is more efficient. In fact, having good typing skills may make it harder to resist the urge to chat. Resist!

(6) TEST YOUR EQUIPMENT BEFORE YOU JOIN THE FRACAS. Its amazing how often buffers aren't loaded, switches aren't thrown, antennas aren't connected and other minor problems make your equipment inoperable. In the pressure during a contest it is easy to overlook things that can cost you a lot of time or even damage your gear. Check everything out before the contest. Being a smoking gun is not the same as being a big gun.

## AN INVITATION

The contest op spends months psyching himself into winning and then spends 48 hours trying to exterminate himself to make it happen. Success is measured by recognition, notoriety, and respect within a very select group who spend most their time lying about their scores and arguing about the rules. Incidently, every good operator personally aspires to the highest ethical standards but secretly thinks that the all other guys cheat.

Do not confuse STATION OWNER with CONTEST OP. The former is an engineer type who buys hardline in 1000-foot spools and puts up giant antennas. He makes a sort of bird feeding station to attract operators. Operators win contests. To the serious contest operator, the availability of hardware may increase his options but it is still just one of several tactical considerations.

Overall, contest operators are a strange, intense bunch. Year after year, they challenge each other, "I am a real, radio operator. If you think you're better than I am, contest and we will see!" Whether you are curious as to how you measure up, or would just like to work some DX, consider this an open invitation to join us.

Good luck. SEE YOU IN ANARTS, June 9, 10 and 11.

**73 Hal, WA7EGA**

# CONNECTIONS

**Cole Ellsworth, W6OXP**
**10461 Dewey St, Garden Grove, CA. 92640**

Dale & I and our other columnists have received mail from many of you readers requesting publication of beginners tutorials on digital mode operation, station setup, explanation of the weird abbreviations and acronyms, etc. So lets get started.

## BASIC SOURCES OF INFORMATION

During a recent visit to the local candy store (HRO - Anaheim), I noticed two books that would make good tutorial texts for the digital radio communication modes. They are both recent publications.

**THE DIGITAL NOVICE** by Jim Grubbs K9EI, QSKY Publishing, P.O. Box 30422, Springfield, IL 62708. 128 pages.

**DIGITAL COMMUNICATION WITH AMATEUR RADIO** by Advanced Electronic Applications (AEA). About 130 pages.

Both books seem to cover all digital modes including Packet at an introductory level. It is highly recommended that anyone new to digital communications read one of these publications. Now some of you folks are saying "but we want to see this in the RTTY JOURNAL!" Well, we are going to try but please remember that it would take the entire contents of five (5) issues of this illustrious Journal to equal the page count in either of the texts mentioned above.

This would be unfair to the more experienced readership. So we have to spread it out. Perhaps, after this "beginners issue," we can come up with a "Newcomer's Corner" in this column either every month, or alternate months in an attempt to keep everyone happy.

A slight digression - I recall reading a series of columns on "How to DX" by JA1AEA in Japan's CQ HAM RADIO magazine several years ago. As I recall, it ran for six months or more and it was amazing to me how Jimmy could dredge up all that basic operating information on working DX and still keep up reader interest. However, I think our own John Troost TG9VT will be able to do just as well in the DX "basics" department.

## *SOME FUNDAMENTAL WHYS AND WHEREFORES*

### HOW TO USE YOUR EQUIPMENT IN DIGITAL MODES

Most current HF (High Frequency) transceivers operate, as a minimum, in Upper and Lower Sideband voice modes (USB, LSB), and CW modes. Some have added Frequency Modulation (FM) and Frequency Shift Keying (FSK, sometimes labeled RTTY) modes.

On HF, with few exceptions, use of digital modes require that you be able to transmit and receive a signal that varies in frequency. This variation in frequency, usually a shifting from one discrete frequency to another, a few hundred Hertz difference, is best done in my opinion by the FSK method. FSK means shifting the transmitted carrier back and forth between Mark & Space frequencies according to the digital data being sent. This means your rig must have either built-in FSK or you modify your rig by making it possible to shift the carrier frequency by FSK. The FSK input from your digital equipment (Modulator/Demodulator (MODEM) or Multimode Controller, Terminal Unit (TU), etc. is normally applied to your transceiver by means of a keying line which provides zero volts and say five volts or 12 volts to the rig's FSK input. This connection will then cause the transmitter frequency to shift according to the data being sent.

If your radio does not have FSK built-in and you do not want to modify your radio, what can you do? In this case you can use the Audio Frequency Shift Keying (AFSK) method of achieving two different frequencies. The keying line is applied to an AFSK generator which outputs two audio frequency tones, one a Mark tone and the other a Space tone.

These audio tones are applied to the microphone (or phone patch) input to the transceiver. This in normally done with the transceiver set to LSB, the reason for which will be covered later on. Now, instead of shifting the carrier frequency, a discrete sideband frequency is created with a frequency output according to whether the input tone is a Mark or a Space. In the case of 170 Hz shift signals, the Mark tone input may have an AF frequency of 2125 Hz and the Space tone input, for 170 Hz shift, will be 2295 Hz. The RF output of the radio will be the carrier frequency minus 2125 Hz for Mark and the carrier frequency minus 2295 Hz for Space. Remember that Low Space Means Fine Teletype (LSMFT) when speaking of RF frequencies. Just the opposite for Audio Frequency (AF) tones. When the transmitted signal is sent this way, the receiving demodulation equipment turns the signal over so that it matches the transmitter input tones where the Mark frequency was 2125 Hz and the Space tone was 170 Hz higher in frequency. This audio tone relationship is called normal or "right side up" keying. If you had your transceiver set to USB mode when using AFSK then the received signal would have been UPSIDE DOWN and your first contact would have told you so! So, if you must use AFSK, be sure your rig is set to LSB mode. The other caveat when using AFSK is to keep the audio level down to where you are not overdriving the rig. If you do overdrive, you will splatter all over the band!

### WHAT IS A CENTER FREQUENCY?

The usual definition of a center frequency is the frequency midway between the Mark and Space frequencies. The Military and Commercial operators are referring to this frequency when speaking of a signal or net RF frequency. In this case the Mark frequency is 85 Hz higher than the center frequency and the Space frequency is 85 Hz lower than the center frequency when using 170 Hz shift. For many years when RTTY was the only frequency shift keyed digital mode, Hams preferred to use the Mark frequency when designating a specific operating or net frequency. This was because the Mark frequency was the idling (no data being sent) condition and was easy to find on the receiver. Most tuning indicators were calibrated for at least the Mark tone and many for both Mark and Space tones. Because in FSK transmission, the carrier frequency was being shifted, the Mark frequency was also the carrier frequency. In AFSK transmission, the carrier frequency does not change, only the sideband frequencies change. This should not be a tuning problem as the carrier should be suppressed by at least 40 DB.

### THE RECEIVING SIDE OF DIGITAL COMMUNICATION

If your radio did not have a specific FSK receive mode, you set your rig to LSB mode and tuned the signal for correct operation. There were several possible problems, however. With your normal "wide" SSB filter, you had to tune far enough off the signal center frequency (in order to get the proper beat note to generate the correct tone frequency) but the signal would still be within the passband of the receiver. But an SSB filter is awfully wide for RTTY. Trouble was, if you just put in a 500 Hz filter in place of the SSB filter, the BFO or local carrier oscillator had to be adjusted in

frequency in order to bring the signal within the narrow filter passband and still get the correct tones out. I recall that when I had a Collins 75S-3, I operated RTTY in the CW position of the receiver, but with the carrier oscillator xtal changed to get the right received tones. I could still operate CW with a bit higher tone if I wanted to do so. And RTTY was great using the 500 Hz filter. For transmit, I directly keyed the VFO tube cathode for FSK transmission. Of course the frequency dial reading did not match either the center frequency or the Mark frequency but with the Collins receivers it was easy to move the dial fiducial (that vertical marker line) to show either center or Mark frequency. Starting with the IC-751, ICOM provided a FSK position in it's mode switching that is really nice. In receive, the dial and beat oscillators are set so that you read the mark frequency directly on the digital dial (the offset is built-in) and you can select narrow or super narrow filtering. On transmit, it is true FSK. Ahh - Paradise enow!

While we are talking about dial or digital frequency display readings, the MSO boys have a special method for those who do not use LSB AFSK. Most likely Dick will cover this in his MSO column. I know that he has done so in past issues.

So far I hope I have answered the following questions. 1. Why one should use FSK instead of AFSK when possible 2. Why one should use LSB when operating in AFSK digital modes. 3. The difference between center frequency/carrier frequency/tone frequency and Mark and Space frequencies. 4. What happens when you overdrive the transmitter in AFSK mode.

Note that all the forgoing applies to Baudot RTTY, ASCII RTTY, and AMTOR digital modes.

## *TYING IT ALL TOGETHER*

Another frequently asked question is "How does one connect all this gear so it will work properly?" When you have a personal computer involved, this question becomes even more significant.

### PREREQUISITES

Make sure your gear is properly grounded, and metal chassis, frames, etc. are properly bonded together. All earth grounding leads or straps should be as wide as possible. Even heavy round grounding wires do not work nearly as well at RF frequencies as flat metal strap. Make sure all your cabling and interconnections are shielded with the shields properly grounded. Read your manual or operator's guide carefully from cover to cover. Depending on the skill of the manual's author, you may have to read it several times. If something is not clear to you, ask another ham friend or call the equipment maker's help line. Some Amateur Radio makers have a section on Compuserve Information Service specifically designed to assist user's of their gear when they run into problems. ICOM, AEA, and MFJ are three manufacturers who come to mind.

They all have help sections in the HAMNET group on Compuserve (GO HAMNET at the prompt). I am afraid I am going to have to make a comment that may not be well received by all, and that is "Given the complexity and sophistication of modern amateur radio gear, one MUST devote some time to study and research in those areas where one is not proficient" This does not have to be something laborious. It can be fun! Become an Information Sponge! Soak up everything you can read. If you are young, it may be later before that information is useful; if you are my age that information is going to have to become useful sooner!

### THE MOMENT OF TRUTH

Lets say you have all your gear hooked up for AMTOR or RTTY just like it shows in the manual and everything looks good so now you want to connect the computer. Integrating your computer into the radio system is probably the most likely place for FRUSTRATION to rear it's ugly head. Commonly used computers in the ham fraternity (oops - sorry, that's sexist) include the Commodore C64/C128 series, Apple and Apple Macintosh, and the ubiquitous IBM PC or compatible. Also, let us not forget the Tandy (Radio Shack) series of computers, some of which are more or less compatible with the IBM PC. All of these computers use "ports" to connect to external devices (in computerese, external devices are "Peripherals"). A port is a physical connector/connection on the computer to which one attaches an interconnecting cable from a peripheral. These ports come in two flavors, "parallel" and "serial" A good example of a parallel port on the IBM PC, which is capable of transferring data at up to 40,000 characters per second, is the "Printer Port" to which one obviously connects his printer. At this point it is well to mention that the peripheral, in this case the printer, must have the same type of port/interface on it's end of the communication chain. The parallel port is good from the point of transferring data quickly, usually much more quickly than the serial port. Data is passed a byte (8 bits) at a time. (A "bit" is the smallest significant piece of information that can be sent. It can be either true or false, high or low, meaning it is two-state (binary). For example, the computer language equivalent of a single character (A or B or Z) can be represented by one byte in ASCII code or can represent two characters if coded in hexadecimal. Thus those 8 bits in a byte can represent 256 different characters depending on which bits in the byte are high and which are low. (how so? - well, 2 to the 8th power is 256).

Serial ports pass data 1 bit at a time instead of 8 bits (1 byte) at a time. Because for the same computer speed, it takes about 6 times as long to send data through a serial port even at the serial port's highest data rate, Serial ports are best used where fast transfer is not a necessity (for example MODEMS operating at 300 to 9600 baud which is about 30 to 1000 characters per second). The advantage of a serial port is that it will transfer data over distances of at least fifty feet, whereas the normal parallel port is limited to about 10 feet maximum. Another advantage is that serial port cables can contain as few as 3 or 4 wires instead of the 12 or more required for parallel cables.

Some computers do not have a parallel printer port. The C64/C128 uses a serial peripheral port for printers and for external disk drives, all on a daisy-chain arrangement. If you do not have a printer designed specifically for use with the C64, you will have to buy an adapter.

Your TNC or MODEM or MULTIMODE controller is just another peripheral to your computer and is almost always connected by means of a serial interface/port connection. Very few

manufacturers follow the RS-232 serial port standard exactly so you must be sure to follow the installation instructions as given.

This column has just barely scratched the surface of radio system integration, that is, tying it all together so it works like you wish. I hope to make a "newcomers corner" available in each column or at least alternate columns to continue this tutorial. Meanwhile read the publications I have mentioned, read back issues of the RTTY Journal ( I wrote several columns about three years ago on Serial and Parallel ports and their uses. Dale may reprint these columns as a pamphlet). Read catalogs from computer suppliers , many of them have much detailed information on connecting computers to peripherals.

Last but not least, I invite users who have solved various integration or operational problems to write an article for publication. Users of Apple computers, Tandy, and C64 are especially invited to provide their latest problem fix, or just general interface information for publication in the RTTY Journal. To all of you who have written asking for newcomer's tutorials, is this what you want? If not, let me know and I will try to steer the tutorial in the desired direction. If you have problems with my verbal rambling, would graphic illustrations be preferred? To you old timers, if I have messed up in my explanations and definitions, please correct me. Too many technical errors get propagated the way it is without my adding to them.

The July-August column will include a fine article by Jim Sladek WB4UBD on modification of the Kantronics KAM multimode controller bandpass filters for better operation. Until then, very 73.

**de Cole, W6OXP**

# AMTOR

**Eddie Schneider, W6/G0AZT**
**1826 Van Ness, San Pablo, CA 94806**

Last month I gave you a short introduction into the two modes of AMTOR. Namely, FEC (Forward Error Correcting), and ARQ (Automatic Request). In this issue, I will try to overcome some of the so called "obstacles" of getting on the air with this great mode.

## Getting started on AMTOR

Assuming that you have read your software/TNC manual, at least once, I would suggest that you first ensure that ALL the connecting leads between the computer, TNC, radio and even the video monitor, (It's no fun watching text bouncing up and down on your monitor at 2OMS intervals, believe me!), are wound around ferrite rods. All leads should also have good shielding and be bonded together to a good ground.

Okay, everything nicely installed and ready to run. What next?? Load the software into the computer, set the various parameters such as, WORD-WRAP, CR/LF, Zulu time and MOST important, insert YOUR Sel-Cal into the system. Selection of Sel-Cals was covered in last months column.

## HINTS AND KINKS:

1. Don't use an amplifier in ARQ. More on that, later!

2. Leave your AGC in the fast or off position to begin with. Most modern day JA-boxes have switching times, RX-TX-RX, that are fast enough for successful ARQ operation. If you have an older rig, do not despair, read on.

3. Do not use VOX, Processor or Mic amplification.

4. If you are using AFSK, i.e. feeding the rig via the mic input socket, here is a good method of ensuring that you do not overdrive the audio input. Key the transmitter, select ALC reading, then turn the mic gain up just enough to move the needle off it's stop.

5. Do not "sweep" the band in an attempt to lock-on to the other station. Don't forget that he is trying to find YOU so if you keep moving frequency you are both going to have a hard time getting a link.

6. If the link breaks down, allow the Master to attempt to re-establish the link first. Two stations trying to call each other in ARQ at the same time, produces a lot of chirps but no link!

7. There is no need to send words/text more than once, when in ARQ.

8. When calling FEC, you are at full duty cycle, like Baudot, so turn down the power output, if your rig/psu cannot handle full duty cycle conditions.

9. Leave the software timer at default, usually 2Oms.

10. Give a couple of CR/LFs at the start of each over, it looks good and helps the other guy find your next bit of text. Don't go overboard with CR/LFs between lines, because if you are like me, in the head-down mode, trying to find the correct keys to attempt to spell fairly well, too may CR/LFs and his text has scrolled off the screen by the time you look up to read it!

**Now the BIG decision.** Do you try a CQ call in FEC, or hunt around for someone else calling CQ?

If you decide to call CQ in FEC, please do NOT send a string of RY's. They are of no real significance or use with modern day Baudot and are totally useless in FEC (no mark or space is used in the FEC mode). FEC sends each character TWICE, so here's what you can try:

Hit whatever keys you need to key the transmitter, I use CTRL and B, let the transmitter send some "idles"", similar to the "diddle" (mark/space) you hear in Baudot. About 5-1O seconds (max) should be enough to attract someone's attention and give their system time to synchronize with yours. Then type the following: CQ CQ CQ de W6/G0AZT W6/G0AZT W6/G0AZT Sel-Call is GAZT GAZT GAZT GAZT de W6/G0AZT (GAZT) Pse K.

I always drop my call and Sel-Cal in at the end, just in case someone comes up on frequency halfway through your CQ call and misses the first part. If you do not get an immediate response, don't give up, call CQ a few more times.

Bingo, you strike it lucky first time, and

all of a sudden your transmitter starts to "key" on and off. Instant panic! What do I do now?? Well, someone has typed your Sel-Cal into his system and now the computers via the TNCs take over, and trigger the rigs, producing the familiar chirping sound that you may have thought was a male and female crickets "enjoying" themselves at dusk!

The station that initiates the ARQ call, by selecting your Sel-Cal, is called the Master. The station being called in ARQ, is the Slave. If the link has been started but the Slave gets no text, the SLAVE should try moving his VFO, VERY slowly, one way or other , to "net" onto the Master's exact transmit frequency. The Master should not move his transmit frequency back and forth, to try and "lock-on" to the Slave. If the Slave is slow to establish a successful link and no text is flowing, the Master can use his RIT to compensate for any slight off-set there may be between the two transmitters and hopefully get text flowing.

Assuming that the link is now established, the Master should have passed his name QTH etc, and should then type the "change-over" sequence of +?. The +? indicates to the Slave computer that it is it's turn to do some work. The Slave operator should have had time to type ahead with his name, QTH and whatever else he wishes to say and then he in turn should type +? to pass it back to the Master. You've made your first ARQ contact, not as bad as you thought, eh?

Okay, the link is going well, suddenly some QRM on or near your frequency, either slows down the traffic or in an extreme case, may even break the link and stop your transmitter altogether. Don't worry, the Master should still have your Sel-Cal logged in at his end and as soon as his computer senses a broken link, it will start a re-call and try to re-establish contact. If the Master doesn't come back straight away, his system may have "timed-out" so give him a chance to re-set things at his end. Two stations trying to call each other in ARQ, at the same time results in a lot of chirping, but no link!

Your fingers are getting tired, your brain cannot function because there is too much adrenaline flowing, this being your very first ARQ contact, so you want to sign off and sit back and have a stiff whiskey and kiss the cat, to celebrate your achievement.

Obviously you would like to be polite and say your goodbyes etc., so do just that and either let the Master cut the link or if you have plucked up enough courage, just hit Ctrl and D (my software) at the end of your last transmission. Ctrl and D is the polite way of closing down the link. It leaves both stations ready for another ARQ call and does not leave one transmitter chirping away until it "times out", which in my case could be as long as 90 seconds!

After you have recovered from your first successful ARQ link, you may wish to proceed further and see if YOU can be the MASTER.

Tune around the band until you hear the now familiar sound of FEC. Depending on what software/TNC package you have, you will get an indication of some sort via LEDs or flashing lights, that you have synchronized with the calling station.

If you do not get any text on the screen, but can still hear the FEC sound, do not worry, the calling station does not have enough "idles" in his system, so your system just sits there waiting for the "Sync-idles" to show up. You may only get: "Pse KK" at the end of his transmission, so either you move on, wait for him to call again, or just give out a "who dat?" (WRU) call, ending with your callsign and Sel-Cal.

So you find a station calling CQ, you have his callsign and Sel-Cal up on your screen and you want to establish a link. On my software, I hit Ctrl and A, then just type the four letter Sel-Cal. Once the last letter is struck, my system will initiate an ARQ call to that specific station and you then become the Master and he, the Slave, and the process starts all over again. The Slave should "net" onto you etc.. etc. If you find that whatever you have typed to the Slave, is not being transmitted to him, check that you have "opened" your transmit buffer, to allow the info to get to him!

That just about covers the subject of getting started with your first ARQ Qso. If things do not go as smoothly as I have outlined, do not give up. There is always someone out there who is more than willing to give you some assistance, so please keep trying.

Earlier, I commented on the need to have a rig that will switch from RX to TX and back to TX, in about 20 milli-seconds. For those of you have an older rig, I have detailed modifications available for the FT101ZD, FT102, FT707, FT757, FT901, IC720A, IC730, IC740, TS130, TS430, TS830, TS930, Drake T4, T4X, T4XB and TR5. If you need further info, please send and SASE for a prompt reply.Good luck and happy "chirping."

**73 de Eddie, W6/GOAZT.**

## QSLing to a QSL Manager

First and foremost, when filling out your QSL card, regardless if it is going to a QSL Manager or direct, write legibly and if possible print or type your QSO information. On QSL cards that have the Callsign on one side and the information on the other, always print your Callsign on the information side so the person reading your card does not have to keep flipping the card over to get your Callsign, which will then usually end up being wrong.

Remember ALWAYS to use GMT... there is absolutely no excuse not to use GMT. Pacific daylight time means nothing to a Manager on the East Coast. Always remember when you read your GMT clock that 0000 means the next day on the date: this is ignored, especially most times during the various contests.

When QSLing to a QSL Manager always include means to return your card to you, usually direct, always include the proper SASE, which means Self Addressed Stamped Envelope, or if you are mailing your card outside your country such as Mexico or Canada or Overseas include 2 IRCs (International Reply Coupons) or 1 green stamp (U.S. dollar bill) to defray postage (air) to your QTH plus a SAE (Self Addressed Envelope). On Overseas mail it sometimes helps not to use any call signs on your mailing envelope. This eases the temptation of it being stolen or pilfered.

Always allow sufficient time for your card to get to its destination and usually wait for logs to be received by the QSL Manager, before you QSL a second time. Another helpful hint is when you include either a SASE, or SAE always turn the folded part of your return envelope so it sits on the bottom of your mailing envelope, most Managers open their mail with letter openers and if the folded section of your SASE/SAE is on top there is a very good chance of it being sliced in half and good-bye envelope.

Good Luck and Good DX from a friendly QSL Manager.

**de Joe, W3HNK (QSL Mgr to TG9VT)**


# 1990 ARRL SW DIV CONVENTION IN SAN DIEGO AUGUST 24..26, 1990

# TOWN & COUNTRY CONVENTION CENTER

500 HOTEL CIRCLE NORTH, SAN DIEGO, CA 92108

HOTLINE: 619-278-4284

## Sponsored by: SANDARC, INC.

San Diego County Amateur Radio Council, Inc.

**MAIL FORM BELOW TO:**
**REGISTRATION CHAIRMAN -BOB BOEHME, W6RHV**
**10340 EVERELL PLACE, SANTEE, CA 92071**

**CONVENTION SITE**
**TOWN AND COUNTRY CONVENTION CENTER**
**500 HOTEL CIRCLE NORTH, P.O.BOX 80098**
**SAN DIEGO, CA 92138**

| HOW MANY | | COST | AMOUNT |
|---|---|---|---|
| _____ | Advanced (Before Aug 10th) | @ 10.00 | _____ |
| _____ | Registrations after 8/10/90 | @ 12.00 | _____ |
| _____ | Banquet (Prime Rib) (1000) | @ 28.00 | _____ |
| _____ | Breakfast (Saturday) | @ 15.00 | _____ |
| _____ | Ladies Luncheon (200) | @ 18.00 | _____ |
| _____ | Dinner Cruise (125) | @ 49.00 | _____ |
| | Dinner & Dancing - Open Bar | | |
| | | Total Enclosed | $_____ |

**ARRL 1990 SOUTHWESTERN DIVISION CONVENTION**
**AUGUST 24, 25, 26, 1990**

Print or Type:
NAME _____ CALL _____
NAME _____ CALL _____
NAME _____ CALL _____
STREET _____
CITY _____ STATE _____ ZIP _____

Make Checks Payable to: SANDARC, INC.
FREE ADMISSION TO YOUNGSTERS
16 Years & under accompanied by an adult.
For Reservation on American Airlines or Town & Country Call Toll Free:
California (800) 542-6082 USA (800) 854-2608
(Ask for ARRL Rates)

BRING A SPARE QSL CARD FOR OUR BULLETIN BOARD

## PRIZES

ALL DONATED EQUIPMENT

**GRAND PRIZE**

DIGITAL SIGNAL PROCESSING

KENWOOD TS-950SD

**BANQUET PRIZE**

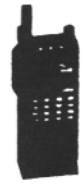
ICOM IC-725

**ADVANCE REGISTRATION PRIZE**

Compact FM Mobile Transceiver

KENWOOD TM-231A

**EARLY BIRD PRIZE**



KENWOOD TH-25A

# CLASSIFIED AD DEPARTMENT

*First 30 words $5.00, additional words 5 cents each. Cash with ad. Deadline for ads is 1st of month of publication. (Example - Ad arrives by 1st of September will be run in the September issue)*

**IBM-PC RADIO COMMUNICATIONS SOFTWARE:** Choose the version that's right for you! CompRtty II/PK for the PK-232; or original CompRtty II for RTTY/CW with standard TU's, and all modes with KAM or MFJ-1278. Numerous features including: adjustable split screen display, break-in buffer, file transfer, 24 programmable messages. CompRtty II/PK uses Host mode for complete control of PK-232, including new mailboxe feature! Complete, printed manual. Ideal for MARS, traffic handling, RTTY pictures. $65.00 either version, $95.00 for both. Mention RTTY Journal and take $5.00 off. Send Call letters (including MARS) with order. David A. Rice, KC2HO, 144 N. Putt Corners Rd, New Paltz, NY 12561

**HAM SOFTWARE IBM/COMPATIBLES** 10 full disks software for Ham radio. Only $26.95. Includes Packet software, formulas, antenna calculations, RTTY, Baudot terminal, Morse code programs and more, 10 disks $26.95. MC/VISA/Discover. de N5ABV EAPCO/R, BOX 14, Keller, TX, 76248-0014 (817) 498-4242 or 1-800-869-7208

REPAIR SERVICE - I repair iRL RTTY terminal units. Seven years with iRL. Send SASE or call (614) 855-3022. WB8YJB Service, 3993 Rey. N.A. Rd, New Albany, OH 43054. (Jon Severt)

FOR SALE: iRL FSK-500 Terminal unit. 1 year warranty. Service manual. $80.00. WB8YJB Service, 3993 Rey. N.A. Rd, New Albany, OH 43054, (614) 855-3022 (Jon Severt).

**HENRY RADIO** -- Your Data Communications Place is overstocked with used equipment. We have HAL DS3100's, MPT/MSO's, Demodulators, and the latest NEW items in stock, (ST-8000, DS-3200, ST-7000, etc). Complete line of Advanced Electronics Applications (AEA), used CP-100 and NEW and used ATU-1000, as well as the PK-232 ALL MODE CONTROLLER. Call Henry Radio at (213) 820-1234 in Los Angeles or (800) 877-7979 outside California. Ask for Fred, N6SFD.

**DIALTA AMATEUR RADIO SUPPLY** Specializing in Digital equipment for over 12 years. Authorized dealer for "HAL Communications Equipment." We also buy and sell used Digital equipment. Call Dick, K0VKH, at (605) 343-6127, or drop us a line at 212 S. 48th St, Rapid City, SD 57702

FOR SALE: Inexpensive way to experience RTTY and AMTOR. VIC- 20/ Microlog AIR-1 with recorder, $140.00. Magnovox mono monitor, $60.00. Heath HO-5404 station monitor with PAN adaptor, $100.00. All work great with manuals. Will ship. Rob, KE8JH (616) 327-2142.

**NEWS - NEWS - NEWS -- NEWS**
Amateur Radio's Newspaper "WORLDRADIO". One year subscription is $12.00.
Contact: WORLDRADIO, P.O. BOX 189490, Sacramento, CA 95818

**RTTY-PC** Communications software makes operating RTTY and ASCII a pleasure! Advanced, high-performance program works with your IBM PC-XT-AT-PS/2 or clone, interface, and transceiver. Very easy to use, yet multi-featured and powerful! Features instant help screen, twelve 1K message buffers, 16K QSO buffer, printer and disk I/O, one key message insertion, and many other features. Easily change/view messages while receiving. User-customizable colors, screen split ratio, and other parameters. Requires minimum DOS 2.0, 256K, RS-232. SPECIAL INTRODUCTORY PRICE $24.95. Please add $3.00 S/H. Write or call for FREE BROCHURE. Manual is on disk; printed manual available for $5.00. Specify disk size & format when ordering; add $5.00 for 1.44 meg disk. ORDERS: CALL TOLL-FREE 1-800-522-6790 VISA/MC accepted. For brochure or info call (419) 278-6790. Comtech Research, 5220 Milton Rd, Dept 2, Custar, OH 43511

**WANTED**: Back issues of RTTY Journal, RTTY (Florida), ARTS (New York) and other teletype publications and a gasoline or diesel generator 50 to 100 KW. Orville Magoon, K6DZN, Guenoc Winery, P.O. BOX 279, Middletown, CA 95461

FOR SALE: ST-6000 $350.00, Apple monitor $50.00, monitor $20.00, 28 ASR (3 speed) W/Dome Reperf $150.00, Model 19 (mint) $100.00, 2 Model 43 (both) $75.00, Sonar 2M FM & PS $50.00, Computer Hutch $50.00. K3KD (215) 754-6286

## *DIDN'T MAKE IT THIS MONTH*

We had planned to have the complete results of the CQ/RTTY Journal W/W RTTY Contest results in this issue but space limitations made it impossible. At the time of publication last month I still had not received the results from Roy Gould, KT1N our Contest Director and didn't realize there were almost 350 entries. That many entries is going to take up a lot of space, plus Roy has included some very nice photos. Consequently, the scores will have to wait until next issue. Thanks for your patience.

RTTY JOURNAL

9085 La Casita Ave.
Fountain Valley, CA 92708

SECOND CLASS
POSTAGE PAID
SANTA ANA, CA
92799-9998